

DRAFT
Environmental Assessment
for
“Guidelines for Living with Florida Panthers and the Interagency
Florida Panther Response Plan”

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Table of Contents

1.0 Introduction.....	3
1.1 Purpose of the Proposed Action.....	3
1.2 Need for the Proposed Action.....	3
1.3 Proposed Action.....	4
1.4 Coordination and Consultation	4
1.4.1 Relationship to Existing Laws and Statutes.....	4
2.0 Alternatives Including the Propose Action	5
2.1 Alternative A, Proposed Action.....	5
2.2 Alternative B, No Action	6
2.3 Alternative C, Frequency/Proximity Management	7
2.4 Other Alternatives Considered but Rejected.....	9
3.0 Affected Environment.....	10
3.1 Biological Environment.....	11
3.2 Social Interests	14
3.3 Coordination and Permits	15
4.0 Environmental Consequences.....	15
4.1 Alternative A, Proposed Action.....	15
4.1.1 Direct and Indirect Impacts.....	15
4.1.2 Cumulative Impacts	19
4.2 Alternative B, No Action	20
4.2.1 Direct and Indirect Impacts.....	21
4.2.2 Cumulative Impacts	21
4.3 Alternative C, Frequency/Proximity Management	22
4.3.1 Direct and Indirect Impacts.....	22
4.3.2 Cumulative Impacts	22
4.4 Summary of Environmental Consequences by Alternatives	22
5.0 List of Preparers.....	24
6.0 Literature Cited/Consulted.....	25
Appendix A (Cooperating Letters)	29
Appendix B (March 5, 2004 FWC Letter to Miccosukee Tribe).....	33
Appendix C (Florida Panther Response Plan)	37

1.0 Introduction

The Florida panther (*Puma concolor coryi*) is one of the rarest large mammals in the United States. Historically, the panther was distributed from eastern Texas or western Louisiana and the lower Mississippi River Valley, east through the southeastern United States including all of Florida (Young and Goldman 1946). Although occasional sightings and signs were reported throughout the rural southeast between 1950 and 1980, the only confirmed panther population was found in south Florida (Anderson 1983). Geographic isolation of the Florida panther, combined with habitat loss, population decline and associated inbreeding, resulted in significant loss of genetic variability and decline in the overall health of the population. To restore genetic variability, eight female Texas panthers were released in strategic locations within south Florida in 1995. Due to the genetic augmentation, the population grew from less than 50 panthers in 1995 to the current population of 80-100. All offspring of the Texas panthers are considered to be Florida panthers.

The panther is listed as endangered under both the Endangered Species Act and Florida law. Increased development into panther habitat has heightened the potential for panther-human interactions, thereby raising public safety awareness issues. Due to the panther's potential for extinction, conflicts with humans raise issues that require careful consideration and action such that the intent and ability to conserve the species is unaltered while at the same time the safety of the public remains paramount. This document considers alternatives for managing panther-human conflicts that are intended to result in non-significant impacts to the panther, humans, and the environment.

1.1 Purpose of the Proposed Action

The Florida Fish and Wildlife Conservation Commission (FWC), U.S. Fish and Wildlife Service (FWS), and National Park Service (NPS) established the Florida Panther Interagency Response Team (Response Team) in June 2004 to manage panther-human interactions while promoting human safety and assuring the continued existence and recovery of this endangered animal. The Response Team, comprised of panther experts and agency representatives, was tasked with developing the Florida Panther Response Plan (Response Plan) to provide guidance for the agencies so that interactions will be handled consistently and quickly while addressing the primary objective of public safety, balanced with the need to recover an endangered species. Because appropriate human behavior is a key to coexisting with wildlife, the Proposed Action will also address public education and outreach focusing on living and recreating in panther habitat.

1.2 Need for the Proposed Action

Florida panthers occur primarily in southern Florida and most individuals reside south of Lake Okeechobee. Recovery actions over the past 25 years, particularly genetic augmentation initiated in 1995, enabled the population to grow from 30-50 to 80-100 panthers. During this same period, the Florida human population has grown 223%, from about 5 million to over 16 million people. Because of increases in numbers of people and panthers, urban/suburban areas now interface with panther habitat, increasing the possibility of panther-human interactions. Since 2002, several panther-human interactions have occurred in south Florida including four instances of depredation on livestock/pets. In two of these instances, due to repeated depredations that presented a demonstrable threat to public

safety (compounded by serious health issues with one of the two panthers), the offending panthers were permanently removed from the population. In addition, public complaints generated by repeated sightings of a female panther and her offspring over a two-year period in a sparsely populated rural community within the Big Cypress National Preserve have increased the agencies' awareness of the need for a management plan to provide more definitive guidance to respond to and manage panther-human interactions and to educate the public about appropriate behavior when living and recreating in panther habitat.

1.3 Proposed Action

The proposed action is to manage panther-human interactions in a manner that will promote both public safety and the conservation of an endangered species.

1.4 Coordination and Consultation

The National Environmental Policy Act of 1969 (NEPA), 42 USC § 4321-4347, and its implementing regulations at 40 CFR Parts 1500-1508, require early and continuous communication with the public, early consideration of significant environmental consequences, considerations of all reasonable alternatives, and the use of all practicable means to avoid or minimize any possible adverse effect of the action on the quality of the human environment (40 CFR § 1500.2[f]). Section 1506.6 of the regulations requires Federal agencies to make diligent efforts to involve the public in preparing and implementing NEPA procedures.

Under Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act) the FWS and NPS consulted with the Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida to solicit their comments and input while drafting the plan. The FWS, NPS, and FWC cooperated with the development of the plan and the Environmental Assessment (EA) (Appendix A). Public comment will be solicited through a notice in the Federal Register.

1.4.1 Relationship to Existing Laws and Statutes

The FWS, NPS, and FWC have prepared this EA in accordance with NEPA, which requires assessments to be conducted which describe the environmental consequences of proposed actions and various alternatives.

Other statutes and regulations related to this EA are described below:

1. Endangered Species Act of 1973 (16 USC 1531-1544) (ESA) – ESA's implementing regulations at 50 CFR, Subpart C, administers prohibitions on taking endangered wildlife and exemptions therein (§17.21(c) *Take*) through harassment, killing, injuring or other means in defense of human lives or in response to a threat to human safety. This is consistent with the requirements of NEPA and the Council of Environmental Quality NEPA regulations.
2. American Indian Religious Freedom Act of 1978 - Public Law 95-341 (42 U.S.C. 1966) establishes as policy of the United States the protection and preservation for American Indians of their inherent right to freedom to believe, express, and

practice their traditional religions. This act directs Federal agencies to evaluate their policies and procedures, in consultation with native traditional religious leaders, in order to determine changes required to protect and preserve Native American religious cultural rights and practices.

3. Florida Administrative Code (FAC) 68A-27 FAC 68A-27 establishes rules relating to threatened and endangered species under Florida law.
4. National Park Service Organic Act (16 USC 1, 2-4) and General Authorities Act (16 USC 1a-1) These acts direct NPS to conserve the scenery, the natural and historic objects, and the wildlife, and to provide for the enjoyment of those resources in such a manner as to leave them unimpaired for future generations.
5. National Wildlife Refuge System Act USC 460k, 664, 668dd,) This act governs the general administration of national wildlife refuges. All national wildlife refuges are maintained for the primary purpose of life and ecological conservation and rehabilitation.

2.0 Alternatives Including the Proposed Action

In accordance with mandates established under NEPA, the FWS and NPS are required to consider a full range of reasonable alternatives for addressing and responding to major public issues, management concerns, and resource conservation opportunities associated with issues arising from panther-human interactions. In determining whether these alternatives provided a satisfactory range of options, the FWS, NPS, and FWC evaluated the following information:

- < Social, economic, environmental and other relevant issues and concerns identified during both internal and public review of the proposed plan;
- < Biological requirements of panthers and other protected fauna and flora potentially affected by administration of the plan; and
- < The legal mandates of the FWS under NEPA and the ESA.

Three alternatives were analyzed using these criteria. All of these alternatives have been used by the FWS, NPS, and FWC in managing panther-human interactions. Alternative B (No Action) was used prior to March 2004 to manage interactions. Alternative C was utilized from March 2004 until February 2005 and was based on guidance outlined in a letter from the Florida Fish and Wildlife Conservation Commission to the Miccosukee Tribe of Indians of Florida on March 5, 2004 (Appendix B). Alternative A, although only a draft, became the guiding document for panther-human interactions in February 2005.

2.1 Alternative A, Proposed Action

This alternative includes *Guidelines for Living with Florida Panthers and the Florida Panther Response Plan* (Appendix C), along with the establishment of an interagency Response Team to implement necessary actions as prescribed by the Response Plan. The Response Team includes law enforcement, wildlife biologists, public information officers, and other agency officials from FWS, NPS, and FWC. This alternative has been utilized

since February 2005 by the interagency team and provides management guidelines based on the best available science and information. This plan prioritizes public safety, while managing panther-human interactions through analysis of human activity and panther behavior.

Chapter One of the document discusses the population status, biology, habitat range, and recovery needs for the panther. As the human population in Florida grows and conservation efforts for the panther continue, an increase in the number of panther-human interactions is likely. As a result, people must have an understanding of how panthers behave, and, conversely, how humans should behave when living or recreating in panther habitat. To this end, Chapter Two provides information on “Living with Florida Panthers.” Chapter Three describes the guidelines the involved agencies will follow for responding to panther-human interactions.

Under this alternative, the Response Team’s responsibility will be to review information related to panther-human interactions, classify these situations based on the documented behavior of the panther, provide an action plan to the responsible agencies, and take approved and appropriate action.

There are six interaction panther-human classifications: (1) Sighting; (2) Encounter/Multiple Encounters; (3) Depredation; (4) Incident; (5) Threat; and (6) Attack. Factors including the panthers’ behavior, attractants in the area (e.g. native prey concentrations, free-ranging pets or livestock), and/or human activity, will be considered during the evaluation of the interaction. Management options may include all or some of the following: outreach and education; aversive conditioning; and/or removal of cached panther prey. If a panther’s behavior indicates a demonstrable threat to human safety, it will be permanently removed from the population (captivity or euthanasia) and will not be relocated. Relocation is an option only if the panther’s location presents a possible threat to public safety (e.g. a dispersing male panther wanders into an urban neighborhood and can not find its way out) or there is a threat to the survival of the panther (e.g. a panther wanders into an area that contains numerous physical hazards). Depending on specific circumstances, the panther may be captured and relocated to suitable habitat, if available, or to an approved captive facility, if necessary.

2.2 Alternative B, No Action

In this alternative, panther-human interactions are managed on a case-by-case basis depending on location and public safety concerns. This alternative was utilized by FWC, NPS, and FWS prior to March 2004. This alternative has the potential to have agencies working at cross-purposes, thereby providing less protection for people. Furthermore, the lack of guidelines could lead to the unjustified removal or relocation of a panther.

On state and private lands the FWC is the lead agency with consultation with the FWS. NPS and the FWS are the leads on lands administered by their respective agencies. The Florida panther is protected under both the ESA and Florida law. Under State and Federal laws and regulations, panther management and protection are the primary responsibility of the FWS and FWC. The NPS is responsible for coordinating panther management on its lands.

Panther captures and handling activities by the NPS and the FWC are permitted by the FWS through section 10 of the ESA and by the FWC under Title 68A of the FAC.

None of the agencies have established guidelines or policies to manage panther-human issues. There are no set criteria for interagency coordination. Sightings of panthers are often reported to the various agency offices; however, no central clearinghouse is designated. These reports may or may not generate a response from an agency, depending on location of the sighting and credibility of the report. If initially thought to be credible, law enforcement officers normally respond to the complaint if the observation of a panther (or sign) is in close proximity to a human or human-occupied structure or area, or involves suspected depredation of livestock or pets. Based on the officer's judgment of the situation, agency biologists may be asked to respond to the scene to confirm that a panther is involved and to work with the law enforcement officers and the agency's chain-of-command to determine the appropriate response. The immediate response of agency personnel is dependent on exigent circumstances related to public safety and the safety of the panther. If considered warranted, coordination is conducted with the FWS to assure that the ESA is enforced.

Management actions may include increased monitoring of the situation, closure of an area, coordination with the private landowner to modify livestock husbandry practices, aversive conditioning of the panther, or removal. Removal of the animal may be done to protect the animal, for public safety concerns, or in deference to perceived danger from the public. An analysis of panther behavior and related human activities might not be taken into consideration during development of a management action. Relocation of a panther outside of its established home range may be used to alleviate a nuisance panther concern. When removal is determined as an appropriate action, coordination is initiated between the FWC, the FWS, and if necessary, the NPS, to determine if the animal is to be removed from the population permanently (including captivity or possible euthanasia) or relocated to other suitable habitat, if available. Capture and removal of a panther would be done by either the FWC's or NPS's panther capture teams, depending on location or other extenuating circumstances.

The agencies do not have an outreach or media plan for panther management. Brochures and handouts are not available to the public; however, the public can access extensive information on the Florida panther through the FWC's PantherNet (www.myfwc.com/panther).

2.3 Alternative C, Frequency/Proximity Management

This alternative includes a Response Team and Response Plan and is the same as Alternative A except in the classification and response to panther-human interactions. The Sighting, Encounter/Multiple Encounters, and Incident sections included in Alternative A are replaced with one section, Frequenting/Loitering, and the Depredation section is modified. The Threat and Attack sections are the same as Alternative A. This alternative provides rigid protocols based on frequency of sightings and proximity to human-occupied structures, without considering panther behavior or influences of human activity on panther behavior. Panthers may be radio-collared inappropriately for non-research purpose to allow agency personnel to detect the animal's proximity to human-occupied areas. This plan could lead to

the unjustified removal of a panther that was merely in close proximity to a human-occupied structure but had not demonstrated any aggression or threatening behavior toward people. Relocation of panthers outside of their established home ranges may be used to alleviate a nuisance panther concern. Management protocol related to panther proximity to human-occupied structures and frequency of occurrence were utilized by the interagency Response Team from March 2004 to February 2005, based on guidelines outlined in the March 5, 2004 letter from the Florida Fish and Wildlife Conservation Commission to the Miccosukee Tribe of Indians of Florida (Appendix B).

Classification of and Response to Panther-Human Interactions

Under this alternative the classification section includes responses related to frequency of sightings and encounters, occurrences of predation, and proximity of a panther to human-occupied structures. Responses to threatening and attack behaviors are the same as in Alternative A.

Frequenting/Loitering: *Panther is sighted repeatedly in or near residential area, schools, campgrounds or similar human-occupied structures.*

If management actions are warranted, the Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps:

Action:

- Provide informational material to residents, landowners and recreational users.
- Post areas with signs where repeated, verified sightings have occurred. Signs will include information on precautions and contact information.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure).
- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species.
- Remove any panther prey items cached nearby, and encourage local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons).
- If a panther continues to remain in the area, capture and radio-collar panther or mark it with paint projectile. Paint marking is temporary.
- Monitor location of panthers and document distance from occupied structures and number of sightings of individual panthers, if possible.

- If panther is located within 100 yards (90 meters) of a human-occupied structure, apply aversive conditioning.
- If the same panther is documented within 100 yards (90 meters) of a human-occupied structure three times and aversive conditioning has been applied at least twice, than the panther will be relocated within its home range or elsewhere or removed from the population as determined by the Response Team.

Depredation: *Panther that preys upon domestic pets (e.g. dogs, cats), domestic livestock (e.g. goats, pigs), or farm/ranch livestock.*

If management actions are warranted, the Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps:

Action:

- Provide informational material to residents and landowners.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure, etc).
- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species.
- Remove any panther prey items cached nearby, and encourage local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons)
- If panther continues to remain in the area, capture and radio-collar panther or mark panther with paint projectile. Paint projectile marking is temporary.
- Monitor location of panthers and document distance from occupied structures and number of sightings of individual panthers, if possible.
- If the same panther continues to prey on livestock or pets and/or is documented within 100 yards (90 meters) of a human-occupied structure three times and aversive conditioning has been applied at least twice, than the panther will be relocated within its home range or elsewhere or removed from the population as determined by the Response Team.

2.4 Other Alternatives Considered But Rejected

The option of utilizing primarily law enforcement officers on the Response Team and eliminating or curtailing the involvement of biologists, to put a higher emphasis on public safety, was considered but rejected. Utilizing only law enforcement officers as the primary responders and excluding biologists from the Response Team would make it more difficult to

determine if the interaction involved a panther as opposed to another species. In addition, the expertise to determine if a panther's behavior is non-threatening and/or indicates normal activity related to curiosity or attraction to prey animals, may be lacking if only law enforcement personnel are involved. Panther field biologists are experts in the biology, ecology, and behavior of this endangered species. Although integral to assuring public safety as part of the response team, law enforcement officers may or may not have biological science backgrounds or the extensive level of experience needed to evaluate a situation involving a panther. Even with training, to differentiate between large dog and panther tracks requires a high level of expertise and experience. For most people it is impossible to determine if one or multiple panthers are frequenting an area based on tracks, fleeting glimpses and/or other sign. It would be difficult for an individual lacking experience in panther field sign to evaluate a potential panther-human interaction; consequently, to thoroughly evaluate panther-human interactions in a timely and appropriate manner, biologists must be involved with the evaluation and management of the situation.

Another option, capturing and radio-collaring every panther, was considered to increase the ability of the managing agencies to track panthers when in close proximity to humans. This option was also rejected. There is no practical way to capture every animal, nor have capture teams been allowed to conduct activities on many private lands that have panthers inhabiting them. Under section 10(a)(1)(a) of the ESA, the FWS permits panther captures for specific purposes related to research and under specified conditions. Only trained biologists and trackers are permitted to capture panthers. These individuals must follow specific protocols that are directly tied to their ability to perform intensive capture activities, which involve significant risk to panthers and the capture team. Additionally, this option would not provide any additional public safety due to the fact that the agencies can not guarantee that every panther in an area is radio-collared.

3.0 Affected Environment

This section of the EA describes the portions of the human environment potentially affected by the proposed and alternative actions. In reviewing a proposed activity for NEPA compliance, the Council on Environmental Quality generally considers the following elements of the human environment:

- Physical Environment (topography, wetlands, floodplains, coastal zones, subsurface conditions, hydrology, soils, energy and mineral resources, toxic substances, and air);
- Land Use (zoning, existing land uses, proposed long-range plans, farmland, and timberland);
- Biological Environment (vegetation, fisheries, wildlife, and threatened/endangered species);
- Cultural Resources (historical sites and standing structures, architectural issues, and archaeological sites)
- Social Interests (human population, human health/safety, and public services);
- Economy (employment, income sources, and economic uses of affected environment);
- Aesthetics (scenic value, noise and odor).

From the list of requisite elements, the **Biological Environment** and **Social Interests** apply to the proposed action because actions relating to one element will have a consequential effect on the other, and vice versa. The proposed action will not adversely or beneficially affect the remaining requisite elements; therefore, no further discussion of these elements is required.

3.1 Biological Environment

This section presents a general description of the biological environment that could be affected by the three alternatives. Management of panther-human interactions primarily will affect individual panthers, but also could affect the panther's primary prey species (white-tailed deer and feral hogs), and competing predators (black bears, bobcats, and coyotes).

South Florida represents a unique combination of geological history, climate, geography, and environmental forces to make it an important reservoir of landscape, community, and species diversity. The only known population remaining for the Florida panther occurs in and around the south Florida counties of Collier, Dade, Hendry, and Monroe. The Big Cypress Swamp physiographic region comprises much of the presently occupied area. Water is the dominant natural resource of this region. Because of the relatively flat limestone underlain topography, 50-75 percent of the area may be flooded during the wet season. These conditions typically last for several months. Extensive sawgrass marshes, prairies, forested swamps, shallow sloughs and upland hammocks, and ridges characterize the region. Public lands comprise approximately half of the known panther habitats in this region. The habitats include upland communities of rockland pine forests and hardwood hammocks. Wetlands are forested swamps of cypress and mixed hardwoods, marshes, prairies, sloughs and ponds.

Florida Panthers

Historically, the panther occurred throughout the southeastern United States, but today only occupies less than 5% of its historic range. Habitat loss, degradation, and fragmentation are the most significant threats to the continued survival of the panther throughout its range. In addition, human-related disturbance and mortality, disease, genetic problems, and contaminants are adversely affecting the panther population.

Survey reports and more than 70,000 locations of radio-collared panthers recorded between 1981 and 2004 found that reproduction is known only in the Big Cypress Swamp/Everglades physiographic region in Collier, Lee, Hendry, Dade, and Monroe Counties south of the Caloosahatchee River (Belden et al. 1991). Although confirmed panther sign, male radio-collared panthers, and uncollared males killed by vehicles have been recorded outside of south Florida in recent years, no female panthers have been documented north of the Caloosahatchee River since 1973 (Nowak and McBride 1974, Belden et al. 1991., Land and Taylor 1998, FWC 2000, McBride 2002, Belden and McBride 2005).

Panthers are wide ranging, secretive, and occur at low densities. Average home range sizes of adult male panthers have been estimated from 128,000 ac (51,900 ha) to 161,000 ac (65,000 ha) and from 47,700 ac (19,300 ha) to 98,000 ac (40,000 ha) for adult females. Transient male home range sizes have averaged 150,000 ac (61,000 ha) (Maehr et al. 1991a, Comiskey et al. 2002). Numerous factors influence panther home range size and the

reproductive success of females, including habitat quality, prey density, and landscape configuration (Belden et al. 1988, Comiskey et al. 2002).

Primary panther prey are feral hog and white-tailed deer (Maehr et al. 1990, Dalrymple and Bass 1996). In Everglades National Park, where feral hogs are scarce, the primary food source is white-tailed deer (Dalrymple and Bass 1996). Generally, feral hogs constitute the greatest biomass consumed by panthers north of the Alligator Alley section of Interstate 75 while white-tailed deer are the greatest biomass consumed to the south (Maehr et al. 1990). Secondary prey species include raccoons, nine-banded armadillos, marsh rabbits, and alligators (Maehr et al. 1990, Dalrymple and Bass 1996). No seasonal variation in diet has been detected. Adult panthers generally consume one deer or hog per week, supplemented by opportunistic kills of smaller prey (Ackerman et al. 1986). A female with kittens may need two such kills per week. Maehr et al. (1990b) documented domestic livestock infrequently in scats or kills, although cattle were readily available on their study area. The distribution of panthers is primarily dependent on the availability of habitat that provides adequate cover and sufficient large prey items such as deer and hogs. As large predators, habitats that accommodate panthers are also generally appropriate for black bears, coyotes and bobcats. Where wetlands and/or canals exist, alligators will also likely persist. In rural communities where houses are dispersed among 1 to 5-acre parcels, and roads are common throughout, panthers as well as their prey and other large mammals are likely to occur.

Intraspecific aggression accounts for 42% of all mortalities among radio-collared panthers (Jansen et al. 2005, Land et al. 2005). Unknown causes and collisions with vehicles account for 24 and 19% of mortalities, respectively. From 1990-2004, mean annual survivorship of radio-collared adult panthers was greater for females than males (Land et al. 2005). Most intraspecific aggression occurs between male panthers; but, aggressive encounters between males and females, resulting in the death of the female, have occurred. Defense of kittens and/or a kill is suspected in half (5 of 10) of the instances through 2003 (FWC 2003). Rapid development in southwest Florida has compromised the ability of landscapes to support a self-sustaining panther population (Maehr 1990, 1992). Maehr (1990) reported that there are approximately 3,401 mi² (9,000 km²) of occupied panther range in south Florida and that approximately 50% is comprised of landscapes under private ownership

Although the panther population has grown from 30-50 to approximately 80 since 1995, habitat continues to decline in quantity and quality. Consequently, less vacant habitat is available for panthers in south Florida. The potential for panther-human interactions on public or private land exists and is likely to increase as development spreads into panther habitat and as more people live and recreate within public lands.

White-tailed Deer

There are approximately 700,000 white-tailed deer (*Odocoileus virginianus*) in Florida (Schaefer and Main 2001). White-tailed deer are the most economically important big game mammal in North American and Florida. White-tailed deer preferred habitat consists of a mixture of forest, open grasslands, agricultural fields, and riparian areas. Deer are browsers and feed upon a mixture of vegetation, depending on the season of the year. They eat the fresh shoots of woody shrubs and vines, succulent green plants, grasses, acorns, mushrooms,

and aquatic plants, in addition to many other types of plants. Natural predators of white-tailed deer in Florida are limited to Florida panthers, bobcats, coyotes and occasionally, black bear.

Feral Hog

The wild hog (*Sus scrofa*) population in Florida consists of free-ranging swine that are descendants of domestic herds that have ranged the Florida landscape since the 1500's. The wild population of hogs in Florida has been supplemented through the years by deliberate releases to increase hunting opportunities (Giuliano and Tanner 2005). Wild hogs are found in every county in Florida. The estimated population of free-ranging hogs in Florida is 500,000.

Hogs use a variety of habitats. They can be found in pine flatwoods, bottomland hardwood forests, marshes, swamps and agricultural lands. Water availability is a limiting factor for hogs. Wet soil conditions are necessary for hogs because of their need to wallow, which is used as a cooling mechanism and as a way to reduce ectoparasites (Giuliano and Tanner 2005). Seasonal changes in habitat use are related to food availability. Food preferences include hard mast (acorns and hickory nuts) and soft mast (plums, soft fruit). Wild hogs are omnivorous and prefer plant material, but will consume carrion. Wild hogs can cause significant losses to agricultural crops through foraging. Their rooting also can destroy wildlife food plots and gardens.

According to Giuliano and Tanner (2005), humans are the main predator of adult hogs, but alligators, black bears, and Florida panthers also prey on them. Young hogs may be preyed upon by smaller predators including foxes, coyotes, and bobcats. Feral hogs are the primary prey of Florida panthers in southwest Florida (Maehr, et al 1990).

Bobcat

The bobcat (*Felix rufus*) occurs throughout Florida, as far south as Matecumbe Key. The bobcat is solitary and occupies primarily swamps and forests. They prey on small mammals, birds, and, infrequently, white-tailed deer. Bobcats frequently live within close proximity to humans, although they seldom prey on domestic livestock or pets (Cryer and Mazzotti 2002). The bobcat is an economically-valuable furbearer in Florida.

Black Bear

Florida has only one species of wild bear, the Florida black bear (*Ursus americanus floridanus*). Black bears are solitary with the size of their home range dependent upon the availability of food, the sex, age, and reproductive status of the individual, and population density. The Florida black bear has experienced a significant population reduction due to habitat loss (Schaefer and Sargent 2001) and is restricted to a few large areas of relatively undisturbed habitat. Dense forested areas are their preferred habitat. Black bears are omnivorous and feed on a large variety of vegetation, including tubers, seeds, fruits and young shoots. Black bears occasionally eat small mammals.

Coyote

The coyote (*Canis lutrans*) recently has expanded its range into Florida and is now found throughout the state (Maehr et al. 1996). Coyotes are extremely adaptable and use a wide variety of upland and wetland habitat including urban/suburban areas (Coates, et al 2002), but prefer open terrain (Young and Jackson 1951; Parker 1995). Food includes small mammals, reptiles, fruit, and grass. They are also significant predators of white-tailed deer fawns. In addition to native prey, coyotes also take domestic pets and livestock, including sheep, calves, poultry, hogs, and goats.

3.2 Social Interests

The region's economy is heavily dependent upon the tourist industry, which has contributed to the rapid growth of the area. Tourism is an important part of Florida's economy. Clean air, a subtropical climate, extensive natural resource amenities and diverse recreational opportunities make the south Florida area extremely attractive to tourists, retirees, and year-round residents. A 2002 survey stated that 66% of visitors from other mainland states were likely to participate in a nature-based activity during their vacation (Visit Florida.org 2005). Between the 1990 and 2000 census, the State of Florida grew by over 23.5%, nearly twice as fast as the population of the country (13.1%). The three southwestern Florida counties that support the majority of the panther population, Collier, Lee and Hendry Counties, grew 65.3%, 31.6% and 40.5% respectively, during the same period (U.S. Bureau of the Census, 2000). The human population of Collier County, where most panthers reside, more than doubled in 14 years (1990-2004), from 152,000 to 306,000 (U.S. Census Bureau, 2004).

Because peninsular southwest Florida is bounded by the Gulf of Mexico, urban and agricultural growth has naturally expanded to the east into habitats where panthers occur. Relatively isolated towns and communities have been experiencing surging human population growth in recent years. The northern Golden Gate Estates (approximately 100 mi²) was established in the 1960s as part of a 173 mi² subdivision, yet only now is it nearing build-out (Derr 1989). Still, these areas of development maintain a rural setting for homes on lots from 1-5 acre homesteads. If allowed to persist, trees and shrubs provide ample buffers and visual barriers between home sites and provide cover and seclusion for larger wild animals, including panthers. Shopping centers and other businesses are largely absent in these communities, offering residences a relatively secluded and somewhat isolated lifestyle that many are attracted to. Here, people are able to raise livestock such as chickens and pigs, and maintain acreage for horses. Outside of these rural communities several campgrounds dot the interior portions of south Florida, including camping and RV facilities on state and federal lands, providing wilderness experiences to hikers and campers. In contrast, over the past 10 years, large landowners have sold, donated or bartered agricultural lands and wilderness for large-scale intensive development. Florida Gulf Coast University, built on 760 acres just east of Interstate 75 in Lee County, broke ground in 1995. Since then, intensive housing and infrastructure development has occurred around the university. Despite the intensive development, panthers, bears and various prey species continue to be sighted within these areas. In 2005, groundbreaking began on the Ave Maria University and town of Ave Maria on 5,000 acres of rural lands, approximately 20 miles northeast of Naples. An eventual enrollment of 5,000 students is planned and 11,000 residences are scheduled to be built within the current acreage (U.S. Fish and Wildlife Service 2005). Keeping in step

with past development trends, the building of both intensive housing and supporting infrastructure, which effectively supplants existing wilderness and rural lands, is continuing with the Ave Maria development.

Human encroachment into interior southern Florida is placing growing constraints on wilderness-quality lands currently in private ownership. Furthermore, infrastructure development, such as roads, is encumbering panther distributions throughout their ranges. Continued and unregulated human population growth is expected to increase road mortalities and injuries and potentially increase the likelihood of human interactions with panthers.

3.3 Coordination and Permits

Under State and Federal laws and regulations, Florida panther management and protection are the primary responsibility of the FWC and the FWS. The Florida panther is protected under the ESA and FAC 68A-27. The NPS is responsible for coordinating panther management on its lands. These three agencies are integral to the management, conservation, and recovery of the Florida panther and are committed to enforcing all applicable Federal and State laws. Florida panther capture and handling activities are permitted by the FWS through section 10 of the ESA and by the FWC under Title 68A of the FAC. Panther management activities on Seminole and Miccosukee Tribal lands will be closely coordinated with Tribal members and designated Tribal employees. The three agencies are committed to working with the Tribes to mitigate any impacts associated with management responses to panther-human interactions. Necessary management actions will not exclude either Tribe from exercising their customary use and occupancy rights where they exist on NPS lands (Public Law 93-440 and Public Law 100-301).

4.0 Environmental Consequences

This section discusses and evaluates potential impacts of the three alternatives on the biological and social, economic and human health components of the area. Alternative A, the proposed action, provides a plan that analyzes human activities and panther behavior and bases management actions on guidelines that provide for human safety and protection and conservation of the panther. With Alternative B, panther-human interactions are managed on a case-by-case basis with no established interagency guidelines or protocols. Alternative C bases the level of response to panther proximity to human-occupied structures and frequency of occurrences.

4.1 Alternative A – Proposed Action

This alternative provides guidelines for evaluating panther-human interactions and provides the basis for appropriate management responses based on panther behavior and analysis of human activity. Understanding panther behavior and modifying human activity will help reduce negative panther-human interactions. Taking appropriate actions following panther-human interactions will maximize public safety and panther conservation.

4.1.1 Direct and Indirect Impacts

Biological Impacts: Immediate and direct impacts include removal of panthers from the local population through relocation to appropriate vacant habitat (under very limited circumstances), removal to captivity or euthanasia. Relocation would be within the animal's

home range, if known, or to an appropriate release site. The level of impact caused by removing an individual from the panther population would be affected by the sex and or age of the animal removed, the status of the panther population in the area from which it was removed, and the size and demographics of the panther population at the release site (unless the animal is transferred to captivity or euthanized). For instance, removing a female panther and her dependent kittens would have a much greater adverse effect on the panther population than removing a young dispersing male. Additionally, if the local panther population consists of few breeding females, and the animal removed is a breeding female, then the action could greatly reduce the number of kittens born within the area for several years. Kautz et al. (2006) estimated that existing panther habitat could support 79-94 panthers. Based on the 2002-2003 field count by McBride (2003) of 87 panthers, the existing habitat south of the Caloosahatchee River may be at carrying capacity. Currently, there are no approved plans to relocate panthers north of the Caloosahatchee. Consequently, any panther relocated outside of its home range most likely would be released within the home range(s) of resident panthers south of the Caloosahatchee River, which could cause a disruption in the social structure of the local panther population, and increase the likelihood of intraspecific aggression between panthers. Ruth et al. (1998) conducted research on relocated cougars in New Mexico and documented low survival rates and unpredictable movements. In May 2004, a 10-month old male panther was removed from the Big Cypress National Preserve out of respect for the cultural and religious significance of the Green Corn Dance site to the Miccosukee Tribe of Indians of Florida and moved 60 miles north to a state forest. In January 2005, the relocated panther was killed by another panther.

Removal to captivity effectively eliminates the animal from the breeding population. These animals potentially could become part of a captive breeding program, but currently, there is no established program to breed panthers in captivity for future releases into the wild. Obviously, euthanasia permanently removes the animal from the population, eliminating any breeding potential.

Additional direct impacts include risks associated with the capture and monitoring of panthers and the use of aversive conditioning, a management technique that utilizes non-lethal methods (loud noises, trained dogs, capture, marking, etc.) to cause an animal to leave the area and to associate humans with an unpleasant experience. Capturing, radio-collaring, marking, and otherwise chasing panthers may result in unintentional take. Mortality or injury may result from a capture event because of capture-induced trauma or an adverse reaction to immobilizing chemicals. Routine capture activities include the use of trained hounds to pursue and tree the panther and the subsequent anesthetization of the animal with remotely-injected immobilizing drugs. These activities may result in hyperthermia, hypothermia, dog bite wounds, drowning, fractures, lacerations, seizures, head and spinal trauma, penetration of the abdomen or thorax with dart, vomiting, aspiration, pneumothorax, respiratory depression or arrest, shock, cardiac arrest, or complications associated with treatment of the above conditions. In addition, capture and handling events can result in abandonment of kittens, other disruptions of family structure, or injury to a kitten that requires its removal from the wild for rehabilitation. Further, the injury or death of an adult female with dependent-aged kittens (those less than 1 year of age) could result in the death of the kittens or the need to raise them in captivity.

The incidence of injuries, especially serious injuries and mortalities, has been low over the last 25 years of panther capture work in part because of stringent capture and handling protocols developed by FWC, NPS, and FWS. Since 1981, the FWC has captured and immobilized 133 panthers over 296 times with only one fatality, two panthers suffering broken legs that resulted in their temporary removal to captivity for rehabilitation and the successful return to the wild, and the holding of one other panther for 24 hours to treat an injury involving a needle embedded in bone (D. Land, FWC, pers. comm. 2004). NPS staff in BCNP have been capturing adult panthers and handling kittens at dens since 2003. Between 2003 and 2005, the NPS handled 19 adult or dependent juvenile panthers with no injury or mortality (Jansen et al. 2005).

If stringent capture and handling protocols continue to be followed and refined, injury levels are expected to remain low and are not expected to significantly affect important demographic parameters at the population level, including mortality and reproductive rates or recruitment of juveniles. Handling panthers is important for research, management, and monitoring of the population, and overall the risks are low.

In summary, the direct impact of removing, euthanizing, or relocating a panther can adversely impact both the local population from which it was removed and the receiving population. In addition, the capture, handling, marking, and monitoring of individual panthers involves risk and can negatively affect individual panthers.

Aversive conditioning, by definition, causes disturbance to a panther and may result in take as defined in the ESA in the form of harassment and possibly harm. The need for aversive conditioning has been relatively low in the past, and it is not known what effect increased use of aversive conditioning could have on the panther population. Aversive conditioning's goal is to cause the panther to associate humans with an unpleasant experience. Aversive conditioning causes the targeted individual to immediately leave the area where the conditioning was conducted. If the panther is a female with young kittens, this harassment may cause the temporary, and possibly permanent, abandonment of the kittens. If the kittens are older, they may become confused and get separated from their mother, causing additional stress to both mother and kittens. If roads or other hazards are located near by, the panther(s) may be exposed to vehicular collisions. Also, if the panther had just made a kill, the harassment associated with aversive conditioning may cause the animal to abandon its kill. If the prey item is found in close proximity to a human-occupied structure and removed by the agency personnel to further reduce the panther's attraction to the site, then the animal will need to expend additional energy to hunt and capture more food. This extra energy expenditure could be detrimental to the health and survival of the animal, depending on its current health status. Agencies will minimize the extent of take associated with capture, handling, and aversive conditioning and ensure that any such take is authorized, pursuant to section 7 and section 10 of the ESA.

If a panther is removed or relocated, prey species in that area may be impacted. Removal of a panther which is one of the primary predators of white-tailed deer and feral hogs from the area could cause a very limited increase in the prey population. Conversely, the area

receiving the panther may see a minor decrease in prey species due to increased predation pressure. This change in prey densities due to the removal or relocation of a panther may affect prey availability for other predators. Although bobcats and bear occasionally take deer and hogs, these predators will not likely be adversely affected by the presence of a panther. However coyotes can be a major predator on fawns. Consequently, the effect of the removal or relocation of a panther on the local white-tailed deer population could affect the prey availability (either positively or negatively) for coyotes.

Education and outreach to the public are important components to the Response Plan. Signage, brochures, leaflets, and other outreach/educational material will be provided to the members of the public that live, recreate or work in panther habitat. The goal of the outreach plan is to change people's behavior to reduce the probability of a negative panther-human interaction. The direct effect on panthers may include the reduction of available native prey near human-occupied structures due to the elimination of wildlife feeding. Exclusionary fencing may change a panther's behavior by preventing prey from entering an area and forcing the panther to hunt elsewhere. Livestock that are properly secured would become unavailable to panthers, forcing them look elsewhere for prey. By reducing panther attractants and teaching people how to live and recreate safely in panther habitat, negative interactions between panther and humans will be reduced, which will reduce the likelihood of a threatening situation occurring that could result harm to a human or the removal of a panther,

Social, Economic and Human Safety Impacts: The first priority of Alternative A is public safety. Implementation of this proposed action should reduce negative interactions between humans and panthers due to the outreach and education component.

When living in areas known to be utilized by panthers, residents should provide shelters or fencing for livestock or pets to prevent depredation by panthers or other predators (bobcats, coyotes, etc). Additional safety-related improvements might include outdoor lighting or fencing to exclude native prey from the area, thereby reducing attractants for panthers. Although these improvements will improve safety for the residents and their domestic animals, the costs of these improvements could have a negative impact on the homeowners. Adults will need to more closely supervise children and keep them inside between dusk and dawn to reduce the likelihood of a negative panther-human encounter. This could change the time, duration and quality of the children's outdoor play time.

Individuals that recreate in panther habitat will be encouraged by land management agencies to take precautions that may impact their outdoor experience. Children will need to be closely supervised and kept close to adults. Pets will need to be leashed. Outdoor activities may need to be restricted during dawn and dusk to reduce human activity when panthers are most active. Although these restrictions will increase public safety, the quality of the outdoor experience to some individuals may be impacted.

Hunters may be affected by the removal or relocation of panthers due to the possible effect on prey abundance. Although the effect that one panther has on a local prey population is minimal, removal of a panther may cause a slight increase in prey abundance. Conversely,

the relocation of a panther to an area may cause a slight decrease in prey abundance. In general, removing or adding one panther to an area would have little effect on available prey for hunters.

Members of the Seminole Tribe of Florida and Miccosukee Tribe of Indians of Florida live within panther habitat. Potential interactions between panthers and humans could occur that would interfere with the Tribes' historic, cultural and religious rights.

As more people move into panther habitat, they will need to be educated about the presence of panthers and how to live with these large predators. Local governments and community leaders will need to implement outreach activities for local residents to increase awareness of safety precautions. Officials responsible for schools located in panther habitat will have to take precautions to ensure the safety of their students. The presence of panthers and other predators (bobcats, coyotes, bears) may deter some individuals from moving into these areas, which could have a negative impact on the local real estate market.

Through education, the public can have a better understanding of panther biology and behavior, can proactively manage their livestock, pets and residential and work areas to reduce attracting predators, such as panthers, and can learn to behave appropriately during a panther encounter to reduce a possible attack. However, the implementation of the necessary safety measures will impact landowners, outdoor enthusiasts, and others that live, work, or recreate in panther habitat.

4.1.2 Cumulative Impacts

A cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonable foreseeable future actions (40 CFR § 1508.7).

Habitat loss, fragmentation, and degradation, and associated human disturbance are the greatest threats to the survival and recovery of the panther. As privately-owned land is converted to agriculture, residential and commercial development, panther habitat becomes more limited and fragmented. Panther habitat loss has been estimated at 0.8% per year using three different methodologies (R. Kautz, FWC, pers. comm. 2003). However, Kautz (Breedlove, Dennis, and Associates, pers. comm. 2005) believes that the rate of loss may be higher than previously estimated. This continued loss limits habitat for dispersal and possible relocation sites, as well as forces panthers into less desirable habitat.

Death due to vehicle-caused mortality has risen from 15 reported deaths between 1984 and 1994, to 43 between 1995 and 2004 (FWC. 2004). This increase could be due to several factors. The panther population increased after 1995 due to the introgression of Texas genes into the population. At the same time, from 1990-2004, the human population in Collier County increased from 152,099 to 296,678 (U.S. Census Bureau 2002, 2004) and in Lee County, from 335,113 to 514,295 (U.S. Census Bureau 2002, 2004). With an increase in human population, came an increase in vehicles use of roads and an increase in construction of roads. Consequently, there were more panthers moving across more roads that were filled with more people and vehicles.

Although disease and parasites have not been documented to be a major mortality factor in the panther population (Maehr et al. 1991b, Taylor et al. 2002), the panther population was exposed to feline leukemia in the late 1990s and several cats succumbed between 2002-2004 (Cunningham 2005).

In addition to disease, the panther population is threatened by environmental contaminants. Some individual panthers have been shown to be at risk from exposure to mercury in the food chain (Newman et al. 2004). Mercury bioaccumulates through the aquatic food chain reaching high concentrations in higher trophic level carnivores such as raccoons and alligators. Panthers preying on these species are at risk for accumulating high tissue mercury concentrations. Other environmental contaminants found in panthers include polychlorinated biphenyls (Arochlor 1260) and organochlorines (p, p'-DDE) (Dunbar 1995, FWC. 2004).

Aggression between males is the most common cause of male mortality and an important determinant of male spatial and recruitment patterns based on radio-collared panthers (Maehr et al. 1991b, FWC 2003). Aggressive encounters between radio-collared males and females also have been documented (FWC 2003, Jansen et al. 2005). Intraspecific aggression, and the associated mortality, could increase as habitat decreases and interactions increase between panthers as they are forced into smaller areas. Intraspecific aggression is also a major cause of concern when relocating panthers into new territories (Ruth et al. 1998).

Any loss from the population of healthy panthers due to relocation or removal will increase the threats to survival of the species that is already threatened by loss of habitat, increase mortality from vehicle collisions, increase occurrence of intraspecific aggression and disease, and environmental contaminants.

Humans have historically feared large predators including panthers. Because of this fear, humans persecuted panthers almost to extinction. As humans continue to encroach on the remaining panther habitat, related development, including houses, roads, schools, and businesses, will further limit population growth of the panther, and may cause the population to decline. Additionally, negative panther-human interactions may increase as the interface between urban environments and wilderness becomes more densely populated with humans.

The proposed alternative protects human life and limits the adverse impacts to the panther population through a coordinated response that analyzes panther behavior and human activities and removes only those panthers that pose a demonstrable threat to human life. Additionally, it provides an outreach plan that will help reduce the negative panther-human interactions through public education, and help build public and political support for the continued protection and recovery of the Florida panther.

4.2 Alternative B – No Action

Under this alternative, management of panther-human interactions is not conducted following any protocol or guidelines. Public outreach and education occur in a limited, sporadic or haphazard manner under Alternative B. The lack of an established interagency panther response plan could lead to unjustified removal or relocation of panthers due to perceived or nonexistent threats, adversely affecting the population and potential recovery of

the species. Additionally, human safety could be jeopardized due to failure to recognize a threatening situation and act accordingly. Without an outreach, education and media plan, the public is more likely to adversely react to the presence of a panther

4.2.1 Direct and Indirect Impacts

Biological Impacts: The lack of guidelines or established plans for the agencies to follow could lead to a situation in which an agency may make a decision to relocate or remove a panther without justification based on a perceived or nonexistent threat or public pressure. Additionally, the lack of an interagency plan could cause confusion regarding federal and state authorities, permits, and regulations. This confusion could lead to an improper decision to relocate, remove to captivity, or euthanize a panther.

The biological impacts under Alternative B are nearly the same as Alternative A. However without established guidelines, management actions such as relocation, removal, euthanasia and aversive conditioning could be applied inappropriately due to the lack of established guidelines, increasing chances of panther mortality, adversely affecting the panther population.

Social, Economic, and Human Safety Impacts: The lack of interagency guidelines or protocols could lead to potentially dangerous situations if the behavior of a nuisance or problem panther is misinterpreted by the responding agency personnel and the situation is not properly dealt with in a timely manner. This could leave humans in a situation where they could experience increasingly serious interactions with a panther. These potentially dangerous situations could lead to loss of livestock and pets, or worse, human life.

Negative encounters between humans and panthers can be reduced through education (Cougar Management Guidelines Working Group 2005). Without outreach through educational materials and the media, the public may not be effectively warned about a potential problem panther in the area. Additionally, the public will not know how to behave when encountering a panther or how to modify their residential landscape or animal husbandry practices to reduce the likelihood of attracting panthers. Without a multiagency outreach and media plan, agency personnel are unable to effectively educate residents and visitors on how to modify their behavior to reduce the risk of encountering a panther. Through analysis and modification of human activities, interactions with panthers can be reduced, which increases human safety and reduces the likelihood of panthers having to be removed, relocated or destroyed. The public is more likely to hurt or kill a panther, regardless of the threat level, if not informed about panther behavior and how to react to an encounter or manage their pets and livestock.

4.2.2 Cumulative Impacts

Cumulative impacts for Alternative B are similar to Alternative A, except that there is a lack of established management guidelines for the responding agencies which increases the likelihood of unjustified removal of panthers. This potential for increase take of panthers, could, overtime, adversely impact the recovery, if not survival, of the species by adding to the current annual mortality rates. Additionally, a lack of proper response to panther-human interactions could result in a threatening situation not being handled in a timely and proper

manner, leading to a potentially hazardous situation for the humans in the area and reducing public and political support for future panther protection and recovery. The lack of a public outreach and education program also could lead to increase negative panther-human interactions, increasing the public's negative attitude toward panthers. All of these factors have potential to negatively impact the panther population and its future recovery.

4.3 Alternative C – Frequency/Proximity Management

Under this alternative, the responses to panther-human interactions are based on frequency of sightings and encounters, occurrences of predation, and proximity of a panther to human-occupied structures. Due to this structured, quantitative response, panthers that may not be a public safety threat could be removed or relocated, increasing chances of panther mortality and adversely affecting the panther population. However, the outreach section of this plan should facilitate the reduction in negative panther-human interactions.

4.3.1 Direct and Indirect Impacts

Biological Impacts: The biological impacts under Alternative C are nearly the same as Alternative A. However, the trigger for removal or relocation is distance to a human-occupied structure and the number of times the animal is documented within this proximity. Due to this structured, quantitative response, panthers that may not be a public safety threat could be inappropriately removed or relocated merely due to their proximity to a human-occupied facility. Consequently, more panthers may be removed or relocated under this alternative, increasing the chance for panther mortality, creating a greater negative biological impact on the population. Also, under this alternative, panthers may be radio-collared not for research purposes, but to increase the ability of agency personnel to closely monitor a panther's proximity to humans. Radio-collaring involves the capture and handling of panther which may result in unintentional take.

Social, Economic, and Human Safety Impacts: The social, economic and human safety impacts are the same as Alternative A.

4.3.2 Cumulative Impacts

Cumulative impacts for Alternative C are similar to Alternative A, except that the rigid protocols for removal increase the likelihood of unjustified removal of a panther that is not a demonstrable threat to the public. This potential for increase take of panthers, could, overtime, adversely impact the recovery, if not survival, of the species by adding to the current annual mortality rate. However, this alternative does provide an outreach plan that will help reduce the negative panther-human interactions through public education, and will help build public and political support for the continued protection and recovery of the Florida panther

4.4 Summary of Environmental Consequences by Alternative

Table 1 provides a matrix to compare impacts of the three alternatives on the biological and social and human safety consequences.

TABLE 1. Summary of Alternative Effects			
IMPACTS	Alternative A – Proposed Action Behavior-based plan, includes outreach plan	Alternative B – No Action No established interagency plan or guidelines	Alternative C – Frequency/Proximity Management Response based on frequency and proximity of interactions, includes outreach plan
Biological Impacts	Response to panther-human interactions is based on evaluating panther behavior and modifying human activity when appropriate. Only those panthers that are a public threat are removed. Aversive conditioning is only conducted when appropriate. Plan minimizes adverse effects to panther population.	Due to lack of interagency plan, panthers could be removed without proper justification. Such removal/relocation could adversely affect panther survival and recovery	Panther proximity to human-occupied structures and frequency of occurrence dictate the level of response. Plan could lead to unjustified removal of panthers which could adversely affect panther survival and recovery.
Social, Economic, and Human Safety Impacts	Implementation of plan would help protect human health and safety and reduce negative interactions between humans and panthers due to the outreach and education component. Humans living in panther habitat may have to modify their yards and daily routines to protect livestock, pets, and children which may have a financial and quality of life impact. Recreational users in panther habitat may need to modify the way they recreate to increase their safety, which may affect the quality of the outdoor experience.	Lack of guidance or plan could lead to lack of proper response to a dangerous situation, potentially leading to loss of livestock, pets or human life. Lack of outreach plan hinders ability of agencies to educate public about risks of living in panther habitat and how to mitigate those risks.	Implementation of plan would help protect human health and safety and reduce negative interactions between humans and panthers due to the outreach and education component. Humans living in panther habitat may have to modify their yards and daily routines to protect livestock, pets, and children which may have a financial and quality of life impact. Recreational users in panther habitat may need to modify the way they recreate to increase their safety, which may affect the quality of the outdoor experience.
Cumulative Impacts	Cumulative impacts to the panther population include habitat loss, vehicle-caused mortality, disease, environmental contaminants and intra-specific aggression. This alternative should limit the removal of panthers to those that pose a demonstrable threat to humans. This alternative provides an outreach plan that will reduce the negative panther-human interactions through public education, and will help build public and political support for the continued protection and recovery of the Florida panther	Cumulative impacts to the panther population include habitat loss, vehicle-caused mortality, disease, environmental contaminants and intra-specific aggression. This alternative could add to the annual mortality rate due to increase unjustified take of Florida panthers. The lack of a public outreach and education program also could lead to increase negative panther-human interactions, increasing the public's negative attitude toward panthers.	Cumulative impacts to the panther population include habitat loss, vehicle-caused mortality, disease, environmental contaminants and intra-specific aggression. This alternative could add to the annual mortality rate due to increase unjustified take of Florida panthers. This alternative provides an outreach plan that will reduce the negative panther-human interactions through public education, and will help build public and political support for the continued protection and recovery of the Florida panther

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6.0 Literature Cited/Consulted

- Ackerman, B. B., F. G. Lindzey, and T. P. Hemker. 1986. Predictive energetics model for cougars. Pages 333-352 in S. D. Miller and D. D. Everett (eds). *Cats of the world: biology, conservation, and management*. National Wildlife Federation and Caesar Kleberg Wildlife Research Institute, Washington, D. C. and Kingsville, TX.
- Anderson, A.E. 1983. A critical review of literature on puma (*Felis concolor*). Special report number 54. Colorado Division of Wildlife Research Station.
- Belden, R.C. and R.T. McBride. 2005. Florida panther peripheral areas survey final report 1998-2004. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.
- Belden, R. C., W. B. Frankenberger, R. T. McBride, and S. T. Schwikert. 1988. Panther habitat use in southern Florida. *Journal of Wildlife Management* 52(4):660-663.
- Belden, R.C., W.B. Frankenberger, and J.C. Roof. 1991. Florida panther distribution. Final Report 7501, E-1 II-E-1. Florida Game and Freshwater Fish Commission, Tallahassee, FL.
- Coates, S.F., M.B. Main, J.J. Mullahey, J.M. Schaefer, G.W. Tanner, M.E. Sunkist, and M.D. Fanning. 2002. The Coyote (*Canis latrans*): Florida's Newest Predator. University of Florida, Wildlife Ecology and Conservation Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. [online] URL: <http://edis.ifas.ufl.edu/UW127>.
- Comiskey, E. J., O. L. Bass, Jr., L. J. Gross, R. T. McBride, and R. Salinas. 2002. Panthers and forests in South Florida: an ecological perspective. *Conservation Ecology* 6(1):18. [online] URL: <http://www.consecol.org/vol6/iss1/art18>.
- Cougar Management Guidelines Working Group. 2005. Cougar Management Guidelines. Wild Futures, Bainbridge Island, WA
- Cryer, L.J. and F.J. Mazzotti. 2002. Bobcat (*Felis rufus*). University of Florida, Wildlife Ecology and Conservation Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. [online] URL: <http://edis.ifas.ufl.edu/UW011>.
- Cunningham, M.W. 2005. Epizootiology of feline leukemia virus in the Florida panther. M.S. Thesis. University of Florida, Gainesville.
- Dalrymple, G. H., and O. L. Bass. 1996. The diet of the Florida panther in Everglades National Park, Florida. *Bulletin of the Florida Museum of Natural History* 39:173-193.

- Derr, M. 1989. Some kind of paradise. William Morrow and Company, New York.
- Dickson, B. G., J. S. Jenness, and P. Beier. 2005. Influence of vegetation, topography, and roads on cougar movement in Southern California. *Journal of Wildlife Management* 69:264-276.
- Dunbar, M.R. 1995. Florida panther biomedical investigations. Annual performance report. Florida Game and Fresh Water Fish Commission, Tallahassee, FL
- Florida Fish and Wildlife Conservation Commission (FWC). 2000. Shindle., D., D.Land, K. Charlton, and R. McBride. Florida panther genetic restoration and management. Annual report, Florida Panther Research Number 93112503002; Tallahassee, Florida.
- Florida Fish and Wildlife Conservation Commission (FWC). 2003. Shindle, D., M. Cunningham, D. Land, R. McBride, M. Lotz, and B. Ferree. Florida panther genetic restoration and management. Annual report, Florida Panther Research Number 93112503002; Tallahassee, Florida.
- Florida Fish and Wildlife Conservation Commission (FWC). 2004. Land, E.D., M. Cunningham, M. Lotz, and D. Shindle. Florida panther genetic restoration and management. Annual report, Florida Panther Research Number 93112503002; Tallahassee, Florida.
- Giuliano, W.M. and G.W. Tanner. 2005. Ecology of Wild Hogs in Florida. University of Florida, Wildlife Ecology and Conservation Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. [online] URL: <http://edis.ifas.ufl.edu/UW220>.
- Jansen, D.K., S.R. Schulze, and A.T. Johnson. 2005. Florida panther (*Puma concolor coryi*) research and monitoring in Big Cypress National Preserve.
- Kautz, R., R. Kawula, T. Hctor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. 2006. How much is enough? Landscape-scale conservation for the Florida panther. *Biological Conservation*, 130:1 pp 118-133.
- Land, D., and S.K. Taylor. 1998. Florida panther genetic restoration and management annual report 1997-98. Florida Game and Fresh Water Fish Commission, Tallahassee, FL.
- Land, D., M. Cunningham, M. Lotz, and B. Ferree. 2005. Florida panther annual report 2004-05. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.

- Maehr, D.S. 1990. The Florida Panther and Private Lands. *Conservation Biology*. 4(2):167-170.
- Maehr, D.S. 1992. Florida panther (*Felis concolor coryi*). Pages 176-189 in S. R. Humphrey, editor. Rare and endangered biota of Florida. Volume I. Mammals. University Press of Florida, Gainesville, Florida, USA.
- Maehr, D. S., E. D. Land, and J. C. Roof. 1991a. Social ecology of Florida panthers. *National Geographic Research and Exploration* 7(4):414-431.
- Maehr, D.S., E.D. Land, and M.E. Roelke. 1991b. Mortality patterns of panthers in southwest Florida. *Proceedings of Annual Conference of Southeastern Fish and Wildlife Agencies*. 45: 201-207.
- Maehr, D. S., R. C. Belden, E. D. Land, and L. Wilkins. 1990. Food habits of panthers in southwest Florida. *Journal of Wildlife Management* 54:420-423.
- Maehr, D.S, R.T. McBride, and J.J. Mullahey. 1996. Status of coyotes in south Florida. *Fla. Field Nat.* 24(4):101-107.
- McBride, R.T. 2002. Current panther distribution and conservation implications—highlights of field work: fall 2001 – winter 2002. Report to Florida Panther Subteam of MERIT, U.S. Fish and Wildlife Service, Vero Beach, FL
- McBride, R.T. 2003. The documented panther population (DPP) and its current distribution from July 1, 2002 to June 30, 2003. Appendix IV in D. Shindle, M. Cunningham, D. Land, R. McBride, M. Lotz and B. Ferree. Florida panther genetic restoration and management. Annual report 93112503002. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL
- Newman, J., E. Zillioux, E. Rich, L. Liang, and C. Newman. 2004. Historical and other patterns of monomethyl and inorganic mercury in Florida panther (*Puma concolor coryi*). *Archives of Environmental Contaminants and Toxicology* 48:75-80.
- Nowak, R.M. and R.T. McBride. 1974. Status survey of the Florida panther. Project 973. *World Wildlife Fund Yearbook* 1973-74:237-242.
- Parker, G. 1995. Eastern coyote: the story of its success. Nimbus Publ. Ltd. Halifax, Nova Scotia. 254 pp.
- Ruth, T.K., K.A. Logan, L.L. Sweanor, M.G. Hornocker, and L.J. Temple. 1998. Evaluating cougar translocation in New Mexico. *Journal of Wildlife Management* 62:1264-1275
- Schaefer, J. and M.F. Main. 2001. White-tailed Deer of Florida. University of Florida, Wildlife Ecology and Conservation Department, Florida Cooperative Extension

- Service, Institute of Food and Agricultural Sciences. [online] URL: <http://edis.ifas.ufl.edu/UW121>.
- Schaefer, J. and M. Sargent. 2001. Florida Black Bear: A threatened Species. University of Florida, Wildlife Ecology and Conservation Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences. [online] URL: <http://edis.ifas.ufl.edu/UW055>.
- Taylor, S.K., C.D. Buergelt, M.E. Roelke-Parker, B.L. Homer, and D.S. Rotstein. 2002. Causes of mortality of free-ranging Florida panthers. *Journal of Wildlife Diseases* 38:107-114.
- U.S. Census Bureau. 2002. Table CO-EST2001-12-12-time series of Florida intercensal population estimate by county. April 1, 1990 to April 1, 2000.
- U.S. Census Bureau. 2004. Population estimates, census 2002, 1990 census.
- U.S. Fish and Wildlife Service. 2005. Technical/Agency Draft, Florida Panther Recovery Plan (*Puma concolor coryi*), Third revision. U.S. Fish and Wildlife Service. Atlanta, Georgia. XXXpp.
- Young, S.P. and F.A. Goldman. 1946. The Puma-Mysterious American Cat. Dover Publications, Incorporated. New York, New York.
- Young, S.P. and H.H.T. Jackson. 1951. The clever coyote. Wildl. Manage. Inst. and Univ. Nebraska Press. Lincoln. 411pp.

Appendix A

[insert FWS letter to FWC-2 pages]

[Insert FWC letter to FWS – 1 page]

Appendix B

[Insert FWC letter to Miccosukee Tribe – 3 pages]

Appendix C

Guidelines for Living with Florida Panthers and Interagency Florida Panther Response Plan

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Tallahassee, FL 32399-1600

U.S. Fish and Wildlife Service
1875 Century Blvd.
Atlanta, GA 30345

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TABLE OF CONTENTS

Introduction.....	40
Chapter 1: Florida Panther –Status, Biology and Recovery	41
Chapter 2: Living with Florida Panthers.....	43
Chapter 3: Interagency Florida Panther Response Plan.....	46
Literature Cited	58
Appendix 1: Florida Panther Response Team	60
Appendix 2: Florida Panther Response Matrix.....	61
Appendix 3: Florida Panther Response Form.....	64
Appendix 4: Florida Panther Outreach Plan	66

INTRODUCTION

The Florida Fish and Wildlife Conservation Commission (FWC), U.S. Fish and Wildlife Service (FWS), and National Park Service (NPS) are the primary agencies responsible for the protection and management of the endangered Florida panther (*Puma concolor coryi*). These agencies are committed to (1) educating Florida residents and the visitors about the Florida panther, (2) providing safety guidelines for residents living in panther habitat and visitors pursuing recreational activities there, and (3) providing responsible agencies with protocols for responding to panther-human interactions.

Chapter One discusses the population status, biology, habitat range, and recovery needs for the panther. As the human population in Florida grows and conservation efforts for the panther continue, an increase in the number of panther-human interactions is likely. As a result, it is important that people have an understanding of how panthers behave, and, conversely, how humans should behave when living or recreating in panther habitat. To this end, Chapter Two provides information on “Living with Florida Panthers.” Chapter Three describes the guidelines the involved agencies will follow for responding to panther-human interactions.

CHAPTER ONE

Florida Panther—Status, Biology, and Recovery

The Florida panther, a subspecies of *Puma* (also known as mountain lion or cougar), is the last subspecies still surviving in the eastern United States. Historically, the panther was distributed from eastern Texas or western Louisiana and the lower Mississippi River Valley, east through the southeastern States including all of Florida (Young and Goldman 1946). Occasional sightings and signs were reported throughout the rural southeast between 1950 and 1980, and the only confirmed panther population was found in south Florida (Anderson 1983). Today's population likely includes fewer than 100 breeding animals. This chapter provides a brief description of the Florida panther, its habitat and current condition, and how the Interagency Florida Panther Response Plan will play a key role in the broader effort to conserve and recover this important species.

Protected Status

The marked decline of the panther prompted a series of actions to protect the species. Prior to 1949, it was legal to hunt panthers in Florida at any time of the year. In 1950, the State of Florida declared the panther a regulated game species due to concerns over declining numbers. The State of Florida removed panthers from the game animal list in 1958 and gave it complete legal protection. The Florida panther was listed as federally endangered throughout its range in 1967 (32 FR 4001), and received further Federal protection with the passage of the Endangered Species Act in 1973 (16 U.S.C. 1531 *et seq.*)(ESA).

Species Description

The Florida panther is a medium-sized mammal described as dark tawny in color, with short, stiff hair (Bangs 1899), and having longer legs and smaller feet (Cory 1896) than other puma subspecies. Adult males reach a length of seven feet from their nose to the tip of their tail and may reach or exceed 150 pounds, but typically average around 120 pounds. They stand about 23 to 27 inches at the shoulder. Adult females are smaller, with an average weight of 75 pounds and length of six feet. The skull of the Florida panther has been described as having a broad, flat, frontal region, and broad, high-arched or upward-expanded nasals (Young and Goldman 1946).

Florida panther kittens are gray with dark brown or blackish spots and five bands around the tail. The spots fade as the kittens grow older and are almost unnoticeable by the time they are six months old. At this age, their bright blue eyes turn to the light-brown straw color of the adult (Belden 1989).

Three external characters—a right angle crook at the end of the tail, a whorl of hair or cowlick in the middle of the back, and irregular, white flecking on the head, nape, and shoulders not found in combination in other subspecies of *Puma* (Belden 1986)—were commonly observed in Florida panthers through the mid-1990s. The kinked tail and

cowlicks were considered manifestations of inbreeding (Seal et al. 1994), whereas the white flecking was thought to be a result of scarring from tick bites (Maehr 1992, Wilkins 1994). Other genetic abnormalities, including congenital heart defects and diminished male reproductive characteristics, were also commonly observed during this period.

To address genetic problems, a management program was implemented with the release of female Texas panthers into south Florida in 1995. This program was designed to restore the depressed panther genetic pool through the replacement of material from this formerly contiguous subspecies, without significant alteration in the basic genetic makeup of the panther. The initial results of genetic restoration have been promising, with an increased population, signs of increased genetic health, current recolonization of areas in Big Cypress National Preserve and Everglades National Park, and increased dispersal (McBride 2000, 2001, 2002; Maehr et al. 2002). Apparently, genetic introgression is also reducing the occurrence of kinked tails and cowlicks in intercross progeny (FWC 2004). The offspring of the Texas panthers are classified as Florida panthers and are protected under the Endangered Species Act.

Habitat and Range

The remaining breeding panther population is in south Florida, south of the Caloosahatchee River. In addition, dispersing males occasionally cross the Caloosahatchee River and have been observed in rural habitats of south-central Florida. The largest contiguous tract of panther habitat is the Big Cypress/Everglades ecosystem in Collier, Lee, Hendry, Monroe, and Miami-Dade Counties. Native landscapes within the Big Cypress Swamp region of south Florida, within occupied panther range, are dominated by slash pine, cypress, and freshwater marshes, interspersed with mixed-swamp forests, hammock forests, and prairies. Florida panthers range widely throughout this area; the most current estimate of home-range sizes for established, non-dispersing adult panthers averaged 60.3 square miles for females and 160.6 square miles for males (FWC 2004). As a result of these wide-ranging movements and extensive spatial requirements, panthers are also particularly sensitive to habitat fragmentation (Harris 1985).

Florida Panther Recovery Plan

Today, the survival and recovery of the Florida panther are dependent upon: (1) maintaining, restoring, and expanding the Florida panther population and its habitat in south Florida; (2) expanding the known occurrence of Florida panthers north of the Caloosahatchee River; (3) identifying potential reintroduction areas within the historic range, and achieving and maintaining additional viable populations outside of south and south-central Florida; and (4) facilitating panther recovery through public awareness and education. To address these points, the FWS recently convened a Florida Panther Recovery Team comprised of multiple government and non-government partners to revise the 1995 Florida Panther Recovery Plan using the best available science. The new Recovery Plan will serve as a guiding framework for taking action to recover the species. The “Guidelines for Living with Florida Panthers and Interagency Florida Panther Response Plan” will be an important component of the recovery effort.

CHAPTER TWO

Living with Florida Panthers

Florida panthers are secretive and rarely seen by humans. They normally live in remote, undeveloped areas. However, as human development within the panther's occupied range increases and the panther population grows, so does the possibility of panther-human interactions. Additionally, however remote, visitors to public lands in south Florida may see or catch a glimpse of a panther. People who live in or near panther habitat and enjoy outdoor recreational activities there should become familiar with panther habitat and behavior.

There is no record of a Florida panther attacking a human. In general, puma attacks within the western United States are rare, but have increased in recent years due to human encroachment into occupied habitat, a reduction in puma habitat, an increase in recreation in puma habitat, and an increase in puma numbers or habituation (Cougar Management Working Group 2005).

In south Florida, the potential for panther-human interactions will likely increase. Considering the panther's increased population numbers, the ever-increasing human population, and urban/suburban areas interfacing with occupied panther habitat, the potential for panther-human interactions is expected to increase. Since 2002, several panther-human interactions have occurred in south Florida, including a few instances of depredation on livestock and pets. In addition, public complaints generated by repeated sightings of a female panther and her offspring over a 2-year period in a sparsely populated rural community within Big Cypress National Preserve have increased the agencies' awareness of potential management challenges related to panther-human interactions.

Panther Behavior

Panther interactions with humans could vary from brief sightings and/or encounters to more threatening incidents that could lead to attacks. According to the Cougar Management Working Group (2005), behaviors by a panther involved in an interaction with a human include avoidance, indifference, curiosity, pre-attack behaviors, and defensive behaviors:

Avoidance—Flight or hiding by the panther; usually indicates no interest in further contact;

Indifference—Lack of attention, or various body movements and positions not directed toward the human;

Curiosity—Various body positions, ears up, may be shifting position, intent attention, following behavior. If this behavior is coupled with hiding, the animal may be assessing the likelihood of a successful attack;

Pre-attack—Crouching, tail twitching, intense staring, and flattening of the ears;

Defensive—Hissing, snarling, and other vocalizations that make the cougar conspicuous, and communicates to the human that it is viewed as a threat to the safety of the panther. Females with young or a panther defending a food item may exhibit this behavior.

In addition to these behaviors, a panther that lives within close proximity to people can become habituated or comfortable to the presence of humans. This animal may eventually become overly familiar or even become a nuisance animal if it continues to frequent an area. If these situations are not properly managed, this animal can become dangerous to livestock, pets, and humans. Our goal is to keep panther behavior natural.

Safety Precautions

Humans and panthers can safely coexist. Through education and outreach, residents and visitors can learn how to live and safely enjoy recreational activities in panther habitat. Although there is no way to prevent all panther encounters, humans can modify their behavior to reduce risks.

Don't Feed Wildlife: By feeding deer, raccoons, or other wildlife in a residential yard, humans are inadvertently attracting prey, which may attract panthers.

Fence Children's Play Areas: Fencing yards and play areas discourage prey animals and panthers from entering.

Keep Children Inside at Dawn and Dusk: Try to avoid activities that place children outside at dusk or after dark. Hikers should also be aware of, and accept, increased risk at dawn and dusk.

Landscape for Safety: Remove dense and/or low-lying vegetation that would provide good hiding places for panthers and other predatory animals, especially around children's play areas.

Install Outdoor Lighting: Keep the perimeter of the residence well-lit at night, especially along long walkways, to keep any approaching panther visible.

Keep Pets Secure: Roaming pets are easy prey for predators, including panthers. Either bring pets inside or keep them in a secure kennel. Do not feed pets outside as this can attract raccoons and other panther prey.

Keep Livestock Secure: Where practical, place livestock in enclosed sheds and barns at night, and be sure to secure all outbuildings.

If a human encounters a panther, there are several actions that can be taken to reduce the possibility of an attack.

Do Not Hike Alone: Hikers should stay in groups, with adults supervising children.

Keep Children Close: Observations of captive puma reveal that they focus on smaller stature individuals, such as children. Keep children within an adult's sight at all times.

Do Not Approach a Panther: Most panthers will try to avoid a confrontation. Give them a way to escape.

Do Not Run from a Panther: Running may stimulate a panther's instinct to chase. Instead, stand and face the animal. Make eye contact. If small children are present, pick them up if possible so they do not panic and run. Although it may be awkward, pick them up without bending over or turning away from the panther.

Do Not Crouch Down or Bend Over: If you are in panther habitat, avoid squatting, crouching, or bending over, even when picking up children.

Do All You Can to Appear Larger: When in the presence of a panther, raise your arms, open your jacket if you are wearing one, and pick up small children. Throw stones, branches, or whatever you can reach without crouching or turning your back. Wave your arms slowly and speak firmly in a loud voice. The idea is to convince the panther that you are not prey and that you may be a danger to it.

Fight Back if Attacked: Try to remain standing and face the attacking animal. Fight back with sticks, caps, jackets, garden tools or whatever is available.

Public Education and Outreach

A comprehensive outreach and education program is essential to provide the public with the information needed to live and pursue recreational activities within panther habitat. Public land management and wildlife management agencies must have a plan that addresses outreach to residents and public land visitors (Appendix 4) and provides educational and informational material. Education can minimize negative encounters between people and panthers (Cougar Management Guidelines Working Group 2005).

CHAPTER THREE

Interagency Florida Panther Response Plan

The FWS, NPS, and FWC established the Florida Panther Interagency Response Team (Response Team) to manage panther-human interactions while ensuring public safety and the continued existence and recovery of this endangered animal. The Response Team is comprised of panther experts and agency representatives (Appendix 1). The Response Team will follow the Interagency Florida Panther Response Plan (Response Plan) which provides guidance to agencies to handle panther-human interactions consistently and promptly while meeting the primary objective of public safety.

The Response Team's responsibility will be to review information related to panther-human interactions, classify these situations based on the documented behavior of the panther, provide a timely action plan to the responsible agencies, and take appropriate action. The Response Team will meet annually to review the previous year's activities and develop any needed updates to the Response Plan for consideration by each agency's chain-of-command. An annual comprehensive report summarizing the Response Team's responses will be provided to a senior-level Management Oversight Committee consisting of the FWS Southeast Regional Director, the FWS Refuge Manager of Florida Panther National Wildlife Refuge (NWR), the NPS Southeast Regional Director, the NPS Superintendent of Everglades National Park, the NPS Superintendent of Big Cypress National Preserve, and the FWC Executive Director. The Oversight Committee will review actions by the Response Team and provide guidance if warranted. For interactions classified as an Incident, Threat, or Attack, the Committee will review the Response Team's actions within 30 days of the event. All reports will be available to the public on FWC PantherNet, www.myfwc.com/panther.

Interactions between humans and pumas in the western states range from fleeting glimpses, repeated sightings, depredation upon livestock or pets, aggression towards people without physical contact, and, in rare cases, attacks upon people. Most western states have protocols in place to document, investigate, and manage these incidents to increase public safety. This Response Plan draws upon the approaches used by western states to manage their puma populations but also recognizes the special needs posed by the endangered status of the Florida panther. The goal of the Response Plan is to promote public safety while addressing the conservation needs of the panther. Public safety will not be compromised.

Under State and Federal laws and regulations, panther management and protection are the primary responsibility of the FWS and the FWC. The Florida panther is protected under the Federal Endangered Species Act of 1973 (16 USC 1531-1544) (ESA) and Florida Administrative Code (FAC) 68A-27. The NPS is responsible for coordinating panther management on National Park Service lands. These three agencies are integral to the management, conservation, and recovery of the panther and are committed to enforcing all applicable Federal and State laws. Florida panther capture and handling activities are permitted by the FWS through Section 10 of the ESA and by the FWC under Title 68A of the FAC. Panther management activities on Seminole and Miccosukee Tribal lands are closely

coordinated with Tribal members and designated Tribal employees. The three agencies are committed to working with the Tribes to mitigate any impacts associated with management responses to panther-human interactions. Necessary management actions will not exclude either Tribe from exercising their customary use and occupancy rights where they exist on NPS lands (Public Law 93-440 and Public Law 100-301).

Florida Panther Interagency Response Team Composition, Responsibilities, and Reporting

The Response Team includes law enforcement, wildlife biologists, and public information officers from FWC, FWS, and NPS (Appendix 1). In most instances, the respective law enforcement agency personnel and biologists will provide the initial response and coordination for significant panther-human interactions.

The Response Team recognizes the critical importance of prompt and appropriate responses to potential public safety concerns that may occur because of panther-human interactions. The team will place a high priority on the efficient and timely completion of investigations, the development of recommendations, and the initiation of appropriate actions. These actions will include outreach ensuring that the public is informed of the interactions.

Geographic areas of responsibility shall be as follows:

- (1) NPS team members shall take the lead in dealing with panther-human interactions within the perimeter boundaries of Big Cypress National Preserve and Everglades National Park. NPS team members from Everglades National Park will be responsible for responding to the Miccosukee Reserved Area lands within the park. If the situation involves private in-holdings, NPS will coordinate with FWC.
- (2) FWS team members shall take the lead in dealing with panther-human interactions within the perimeter boundaries of Florida Panther National Wildlife Refuge or on any other National Wildlife Refuge property within Florida.
- (3) On Seminole and Miccosukee Tribal lands, the FWS (Florida Panther NWR Manager) will coordinate with the Tribes' designated representatives and the Response Team to address the Tribes' concerns. FWC will provide logistical support as needed.
- (4) On all other lands in Florida, the FWC team members shall take the lead on panther-human interactions. Access to private lands will be coordinated with the landowners.

Reports of panther-human interactions shall be directed to the above lead agency based on the location of the interaction. In most cases of reported panther-human interactions, law enforcement officers and biologists will be the first agency personnel to respond. The lead agency will be responsible for collecting details and pertinent information and reporting those findings to the Response Team. Investigations will involve an assessment of the level of public concern by the Response Team's public information/outreach personnel and social scientists, as appropriate.

The Florida panther is protected by both State and Federal laws; therefore, any actions taken by team members or agencies must be in compliance with applicable state and federal authorities and mandates.

Classification of and Response to Panther-Human Interactions

The Response Team identified six interaction classifications: (1) Sighting; (2) Encounter/Multiple Encounters; (3) Depredation; (4) Incident; (5) Threat; and (6) Attack. Agency responses to each of these interactions are discussed below, and a matrix of classifications, actions, and responsibilities can be found in Appendix 3. When investigating an interaction, agency personnel will determine if a panther was present and evaluate its behavior. Normally, a panther-human interaction consists of interactions between panther, people and prey. Some interactions will not fit clearly into a specific category, but will have to be evaluated on individual circumstances of the particular situation. Additionally, humans may unintentionally provoke undesirable behavior in a panther by running away and triggering the chase behavior, not allowing the animal an escape route, or approaching an animal that is feeding or has young. All these factors will be considered when classifying panther-human interactions.

The team members making the first contact will gather information, complete the observation form, and distribute the completed form along with a preliminary assessment of the situation to the entire team. At a minimum, the Response Team members will review the preliminary assessment and make the final classification. While every attempt will be made to contact all team members, it should be understood that certain situations might require action on the part of the Response Team without participation by all team members.

Radio-telemetry has been utilized by biologists for nearly 25 years to gather life history information about Florida panthers. Locations of panthers derived from radio-telemetry equipment merely define the animal's position at a given time. When telemetry shows that a panther's location may be cause for concern, the Response Team will evaluate the level of significance of these locations based on the animal's behavior as outlined in the listed classifications below.

On rare occasions, panthers have been located within populated areas outside of normal panther range. Typically, these individuals are young, dispersing males in search of new territory. In past cases, the panther has resolved the situation by leaving the highly populated area and returning to more suitable panther habitat. If the panther population continues to grow and as human development continues to encroach on the remaining panther habitat, the occurrence of panthers in suburban or even urban environments is more likely. Verified sightings in areas that are clearly not panther habitat and that are densely populated with people such as business districts, highly commercial areas, dense housing developments or other suburbs will be investigated promptly and evaluated by the Response Team.

If a panther's behavior indicates a threat to human safety, it will be permanently removed from the population. The Endangered Species Act permits the removal of an endangered

species that “constitutes a demonstrable but not immediate threat to human safety...” However, if the panther’s location presents a possible threat to public safety (e.g. a dispersing male panther wanders into an urban neighborhood and can not find its way out) or there is a threat to the survival of the panther (e.g. a panther wanders into an area that contains numerous physical hazards), depending on specific circumstances, the panther may be captured and relocated to suitable habitat, if available, or to an approved captive facility. In extreme circumstances, euthanasia may be necessary.

Under certain circumstances, aversive conditioning will be utilized to manage a panther-human interaction. Aversive conditioning is an experimental management technique that utilizes non-lethal methods (loud noises, trained dogs, capture, marking, etc.) to cause an animal to associate humans with an unpleasant experience. In some circumstances, relocating the animal within its home range may serve as aversive conditioning. Although not an extensively researched technique, aversive conditioning has been successfully utilized with a small number of individuals. The results have varied and depend on factors such as the degree of attraction to the area for food, cover, mating, etc. Aversive conditioning is not intended to alter instinctive prey choices, but rather to change the panther’s behavior when in proximity to humans. Consequently, aversive conditioning may not be successful if the panther is attracted to prey and the prey attractant is not removed or excluded from the human-occupied location.

Aversive conditioning, by definition, causes disturbance to a panther and may result in take as defined in the ESA in the form of harassment and possibly harm. Agencies will minimize the extent of take associated with aversive conditioning and ensure that any such take is authorized, pursuant to section 7 and section 10 of the ESA. Radio-collaring can only be done for research purposes under the Section 10(a)(1)(A) permit. It is not an aversive conditioning technique, although when done, it is unpleasant to the animal and may serve as an initial step of aversive conditioning.

Aversive conditioning should only be conducted by individuals who are knowledgeable about puma behaviors or have been trained to understand the concept and use of the technique.

1. SIGHTING: *A visual observation of a panther from a distance.*

Action

Panther sightings fall into two categories, verified - those with corroborating evidence and unverified - those without such evidence. Response Team biologists will examine any physical evidence provided by the public. A panther sighting with corroborating evidence will be considered a verified sighting. Photos of the animal or photos and/or casts of tracks can help with identifying the animal in question. Findings will be reported to the Response Team. Verified sightings outside of the known occupied range and in high human-use areas (e.g., suburban, urban) will receive increased scrutiny by the Response Team. Sightings in occupied panther range do not require any specific management action but can be used as an outreach opportunity. People reporting a panther sighting can be directed to PantherNet

(www.myfwc.com/panther) to learn more about panthers in Florida. Verified and unverified sightings will result in the following action from the Response Team:

- Provide informational material.

Repeated and verified panther sightings in locations that are inhabited by people and that occur over the course of several days or weeks will result in field visits from agency personnel. The Response Team will evaluate if a panther that is sighted repeatedly in close proximity to people or inhabited structures poses a risk to public safety. Communication with the Response Team will be accomplished by a variety of means including phone calls, emails, and posting on a shared-access web site. Multiple panther sightings are not necessarily indicative of any public safety concern; however, educating people about visiting, living, and recreating in panther habitat is always prudent. These situations should be treated as public outreach opportunities.

The Response Team shall be notified of all verified repeated panther sightings and the entity receiving these sighting reports shall complete a Panther Observation Data Form. Completed forms shall be sent to the FWC Panther Section (566 Commercial Boulevard, Naples, FL 34104-4709; e-mail: Darrell.Land@myfwc.com).

The Response Team will review the Panther Observation Data Form and evaluate the presented evidence. After a careful and timely review, the Response Team will make a final determination on the repeated sightings and provide written recommendations to the responsible agency via the agency's chain-of-command. This process ensures that one member from the Oversight Committee will review every recommendation. If management actions are warranted, the Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps:

- Provide informational material to residents, landowners, and recreational users.
- Post areas with signs where repeated, verified sightings have occurred. Signs will include information on precautions, and contact information.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure).
- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species.
- Remove any panther prey items cached nearby, and encourage the local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons).
- Apply aversive conditioning techniques if appropriate and warranted by the panther's behavior and results in public and panther safety. If the Response Team determines

that aversive conditioning will be conducted near roads and highways, law enforcement personnel will assure that all public safety precautions are taken.

2. ENCOUNTER/MULTIPLE ENCOUNTERS: *An unexpected direct meeting or a series of meetings over a two to three week period between a human and a panther, defined by several moments of mutual eye contact occurring before the panther retreats from the situation. The panther's non-threatening behavior may include:*

- *Displaying a lack of attention or indifference to humans.*
- *Retreating at the sight of humans.*
- *Taking a defensive posture, but then quickly retreating.*
- *Making various movements not directed at humans.*
- *Showing signs of curiosity including ears up, standing still temporarily and then retreating.*

Multiple encounters involve the same panther that has shown no aggression nor has deliberately approached people in an area over an approximate two to three week period.

Action

The Response Team shall be notified of all reported panther encounters and the entity receiving the report of an encounter shall complete a Panther Observation Data Form. Completed forms shall be sent to the FWC Panther Section (566 Commercial Boulevard, Naples, FL 34104-4709; e-mail: Darrell.Land@myfwc.com).

If the Response Team investigation confirms the interaction was a panther encounter, it will provide written recommendations to the responsible agency via the agency's chain-of-command. This process ensures that one member from the Oversight Committee will review every recommendation. The Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps, depending on individual circumstances:

- Provide informational material to residents, landowners, and recreational users.
- Post areas with signs where the verified encounter occurred. Signs will include information on precautions and contact information.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure, etc).
- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species.

- Remove any panther prey items cached nearby, and encourage the local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons).
- Apply aversive conditioning techniques if appropriate and warranted by the panther's behavior and results in public and panther safety. If the Response Team determines that aversive conditioning will be conducted near roads and highways, law enforcement personnel will assure that all public safety precautions are taken.
- Pursuant to public safety objectives, alert interagency personnel, including law enforcement personnel, and increase patrols and monitoring in the area.

Not all of these steps will be applicable to every encounter and additional management actions or new techniques may be developed and utilized as needed. Some of these steps may be implemented immediately and prior to the involvement of the Response Team to provide for human and panther safety.

3. DEPREDATION: *A panther that preys upon domestic pets (e.g., dogs, cats), domestic livestock (e.g., goats, pigs), or farm/ranch livestock.*

Action

The Response Team shall be notified of all reported panther depredations and the entity receiving the report shall complete a Panther Observation Data Form. Completed forms shall be sent to the FWC Panther Section (566 Commercial Boulevard, Naples, FL 34104-4709; e-mail: Darrell.Land@myfwc.com). A suspected panther depredation located within the occupied range of the panther will require a field visit from agency personnel. After careful review, the Response Team will make a final determination on the depredation and provide written recommendations to the responsible agency via the agency's chain of command. This process ensures that one member from the Oversight Committee will review every recommendation.

The Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps, depending on individual circumstances

- Provide informational material to residents and landowners.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure, etc).
- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species.

- Remove any panther prey items cached nearby, and encourage the local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons).
- Apply aversive conditioning techniques if appropriate and warranted by the panther's behavior and results in public and panther safety. If the Response Team determines that aversive conditioning will be conducted near roads and highways, law enforcement personnel will assure that all public safety precautions are taken.
- Pursuant to public safety concerns, alert interagency personnel, including law enforcement, and increase patrols and monitoring in the area.

Not all of these steps will be applicable to every depredation and new management techniques may be developed. Some of these steps may be implemented immediately and prior to the involvement of the Response Team to provide for human and panther safety.

The landowner is responsible for protecting pets or livestock, particularly at night, using prescribed methods. Depredations are natural panther behaviors and should not be considered as threatening to humans. Aversive conditioning is not intended to alter instinctive prey choices, but rather to discourage a panther from a specific location where non-native prey is available.

4. INCIDENT: *An interaction between a panther and a human as described in an Encounter, except that the panther displays potentially threatening behavior, such as:*

- *Panther does not retreat when humans take offensive/aggressive actions during a panther-human encounter.*
- *Behavior indicative of curiosity, including intent attention, ears up, may be shifting position.*
- *Intense staring, following, and hiding behavior.*

Natural panther behaviors such as defense of kittens or of kills, or stalking prey may be perceived to be threatening by people; however, these occurrences are coincidental to a chance meeting and are not indicative of a continuing public safety concern.

Action

The Response Team shall be notified of all reported panther incidents and the entity receiving the report shall complete a Panther Observation Data Form. Completed forms shall be sent to the FWC Panther Section (566 Commercial Boulevard, Naples, FL 34104-4709; e-mail: Darrell.Land@myfwc.com).

The Response Team will review the Panther Observation Data Form and evaluate the presented evidence. An initial response will be conducted by Law Enforcement and biologists as soon as possible after receiving the report and will require a field visit by appropriate agency personnel within 24 hours. The Response Team will make a final

determination on the incident and provide written recommendations to the responsible agency via the agency's chain of command. This process ensures that one member from the Oversight Committee will review every recommendation. The Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps, depending on individual circumstances:

- Inform local residents and other affected people of the incident. Provide outreach material (news releases, brochures, warning signs, etc.) that inform and educate the public about living with panthers.
- Post areas with signs where an incident occurred. Signs will include information on precautions and contact information.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure, etc).
- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species.
- Remove any panther prey items cached nearby, and encourage the local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons)
- Apply aversive conditioning techniques if appropriate and warranted by the panther's behavior and result in public and panther safety. If the Response Team determines that aversive conditioning will be conducted near roads and highways, law enforcement personnel will assure that all public safety precautions are taken.
- Pursuant to public safety objectives, alert interagency personnel, including law enforcement, and increase patrols and monitoring in the area. This may include around-the-clock patrols depending upon the circumstances.

Not all of these steps will be applicable to every encounter and new techniques may be developed. Some of these steps may be implemented immediately by agency staff and prior to the involvement of the Response Team in order to provide for human and panther safety.

5. THREAT: *An unprovoked aggressive/predatory behavior toward people including stalking or close approaches that require a person to take defensive action to avoid direct contact. A panther also may be classified as a threat if it has been involved in a previous encounter, incident, or depredation and its behavior departs from expected or known behavior and previous management actions have not deterred the animal's actions.*

➤ *Crouches with tail twitching, intense staring, ears flattened, body low to the ground, head may be up (pre-attack behavior)*

➤ *Ears flat, fur out, tail twitching, body and head low to ground, rear legs pumping (attack imminent)*

Action

Managing public safety and the conservation needs of an endangered species can be difficult; however, a panther that poses a demonstrable threat to public safety shall be permanently removed from the wild or destroyed. A panther deemed to be a public safety concern cannot be relocated to another area because there are no suitable locations where a panther would not likely encounter other human communities. Relocated animals would not be guaranteed to remain in the release area, and they may cause a disruption of the local panther social structure, thereby creating local population instability and possibly contributing to additional intraspecific aggression. Permanent removal is the only management option for panthers that pose a demonstrable threat to human safety.

The Response Team shall be notified of all reported public safety concerns and the entity receiving the report shall complete a Panther Observation Data Form. Completed forms shall be sent to the FWC Panther Section (566 Commercial Boulevard, Naples, FL 34104-4709; e-mail: Darrell.Land@myfwc.com).

An initial response will be conducted by Law Enforcement and biologists as soon as possible after receiving the report and will require a field visit by appropriate agency personnel. The Response Team will make a final determination with respect to the threat and provide written recommendations to the responsible agency via the agency's chain of command. This process ensures that one member from the Oversight Committee will review every recommendation. The Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps, depending on the circumstances:

- Immediate, permanent removal of the offending panther from the wild to an approved captive facility. Euthanasia may also be considered, depending upon circumstances.
- The area where the threat occurred will be closed until the offending panther has been removed, unless local circumstances dictate otherwise.
- Inform local residents and other affected people of the incident. Provide outreach material (news releases, brochures, warning signs, etc.) that inform and educate the public about living with panthers.
- Post areas with signs where the public safety concern occurred. Signs will include information on precautions and contact information.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure, etc).
- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species.

- Remove any panther prey items cached nearby, and encourage the local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons).
- Pursuant to public safety objectives, alert interagency personnel, including law enforcement, and increase patrols and monitoring in the area. This may include around-the-clock patrols depending upon the circumstances.

6. ATTACK: *A direct, physical contact between a panther and a human resulting from aggressive panther behavior.*

Action

The Response Team shall be notified of all reported panther attacks and the entity receiving the report shall complete a Panther Observation Data Form. Completed forms shall be sent to the FWC Panther Section (566 Commercial Boulevard, Naples, FL 34104-4709; e-mail: Darrell.Land@myfwc.com).

An initial response will be conducted by Law Enforcement and Response Team personnel immediately after receiving the report. The Oversight Committee will be alerted immediately in the event of an attack. Every effort will be made to immediately remove the offending panther from the wild. The Response Team shall coordinate resources among all affected agencies and will develop an action plan that will include some or all of the following steps:

- Immediate, permanent removal of the offending panther from the wild to an approved captive facility. Euthanasia may also be considered, depending upon circumstances.
- The area where the attack occurred will be closed until the offending panther has been removed, unless local circumstances dictate otherwise.
- Pursuant to public safety objectives, alert interagency personnel, including law enforcement, and increase patrols and monitoring in the area. This may include around-the-clock patrols depending upon the circumstances.
- Inform local residents and other affected people of the incident. Provide outreach material (news releases, brochures, warning signs, etc.) that inform and educate the public about living with panthers.
- Post areas with signs where the attack occurred. Signs will include information on precautions and contact information.
- Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure, etc).

- Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species. Remove any panther prey items cached nearby, and encourage the local public to cease all wildlife feeding that may attract panthers or panther prey (deer, hogs, raccoons).

Literature Cited

- Anderson, A.E. 1983. A critical review of literature on puma (*Felis concolor*). Special report number 54. Colorado Division of Wildlife Research Section.
- Bangs, O. 1899. The Florida Puma. Proceedings of the Biological Society of Washington. 13:15-17.
- Belden, R.C. 1986. "Florida Panther Recovery Plan Implementation—A 1983 Progress Report", pp. 159-172 in S.D. Miller and D.D. Everett (eds.), Cats of the world: Biology, Conservation and Management, Proceedings of the Second International Cat Symposium. Caesar Kleberg Wildlife Research Institute. Kingsville, Texas.
- Belden, R.C. 1989. The Florida Panther. Pages 515-532 in Audubon wildlife Report 1988-1989. National Audubon Society, New York, New York, USA.
- Cory, C.B. 1896. Hunting and fishing in Florida. Estes and Lauriat. Boston, Massachusetts.
- Cougar Management Guidelines Working Group. 2005. Cougar Management Guidelines. WildFutures, Bainbridge Islands, Washington.
- Florida Fish and Wildlife Conservation Commission (FWC). 2004. Land, E.D., M. Cunningham, M. Lotz, and D. Shindle. Florida panther genetic restoration and management. Annual report, Florida Panther Research Number 93112503002; Tallahassee, Florida.
- Harris, L.D. 1985. The fragmented forest. University of Chicago Press; Chicago, Illinois.
- Maehr, D.S. 1992. Florida panther. In Rare and Endangered Biota of Florida. Volume I: Mammals. S.R. Humphrey, (ed.). University Press of Florida; Gainesville, Florida.
- Maehr, D.S., E.D. Land, D.B. Shindle, O.L. Bass, and T.S. Hockett. 2002. Florida panther dispersal and conservation. Biological Conservation 106:187-197.
- McBride, R.T. 2000. Current panther distribution and habitat use. A review of field notes: fall 1999 – winter 2000. Livestock Protection Company; Alpine, Texas.
- McBride, R.T. 2001. Current panther distribution, population trends, and habitat use. Report of fieldwork: fall 2000 - winter 2001. Livestock Protection Company; Alpine, Texas.
- McBride, R.T. 2002. Current verified population, distribution and highlights of field work. Report of field work: fall 2001 - winter 2002. Livestock Protection Company; Alpine, Texas.

- Seal, U.S. and Workshop Participants. 1994. A plan for genetic restoration and management of the Florida panther (*Felis concolor coryi*). Report to the Florida Game and Fresh Water Fish Commission, by the Conservation Breeding Specialist Group, Species Survival Commission, IUCN; Apple Valley, Minnesota.
- Wilkins, L. 1994. Practical cats: Comparing coryi to other cougars: An analysis of variation in the Florida panther, *Felis concolor coryi*. Pages 14-41 in: D.B Jordan, edition, Proceedings of the Florida panther conference. U.S. Fish and Wildlife Service; Atlanta, Georgia.
- Young, S.P. and F.A. Goldman. 1946. The Puma-Mysterious American Cat. Dover Publications, Incorporated. New York, New York.

Appendix 1.

Florida Panther Response Team

Response Team Members

BCNP Biologist

BCNP Law Enforcement- Chief Ranger

BCNP Public Information Officer

ENP Biologist

ENP Law Enforcement-Chief Ranger

ENP Public Information Officer

FWC Panther Team Leader

FWC Law Enforcement

FWC Public Information Officer

FWS Panther Refuge Manager

FWS Panther Refuge Biologist

FWS Law Enforcement

FWS Panther Coordinator

FWS Public Information Officer

Appendix 2.

Classification	Action	Responsibility ¹
<p>SIGHTING: A visual observation of a panther from a distance.</p> <p>Multiple sightings: Repeated and verified panther sightings in locations that are inhabited by people and that occur over the course of several days or weeks. Multiple panther sightings are not necessarily indicative of any public safety concern.</p>	<ul style="list-style-type: none"> • Provide informational material. • Post areas with precautions and contact information. • Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices (e.g., wire fencing, electric fence, night enclosure). • Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species. • Remove any panther prey caches and cease all wildlife feeding. • Apply aversive conditioning techniques when appropriate 	<p>PIO</p> <p>LE</p> <p>PIO, WB</p> <p>PIO, WB</p> <p>WB, LE</p> <p>WB, LE</p>
<p>ENCOUNTER: An unexpected direct meeting or a series of meetings over a 2-3 week period between a human and a panther, defined by several moments of mutual eye contact occurring before the panther retreats from the situation. The panther displayed non-threatening behavior, such as:</p> <ul style="list-style-type: none"> ➤ Displays a lack of attention to humans. ➤ Retreats at the sight of humans. ➤ Takes a defensive posture, but then quickly retreats. ➤ Makes various movements not directed at humans. ➤ Shows signs of curiosity including ears up, stands still temporarily and then retreats. 	<ul style="list-style-type: none"> • Provide informational material. • Post areas with precautions and contact information. • Offer recommendations regarding improvements to domestic pet/livestock husbandry practices. • Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species. • Remove any prey caches and cease all wildlife feeding. • Apply aversive conditioning techniques when appropriate. • Increase law enforcement patrols and monitoring in the area. 	<p>PIO</p> <p>LE</p> <p>PIO, WB</p> <p>PIO, WB</p> <p>WB, LE</p> <p>WB, LE</p> <p>LE</p>
<p>DEPREDAATION: A panther that preys upon domestic pets (e.g., dogs, cats), domestic livestock (e.g., goats, pigs), or farm/ranch livestock.</p>	<ul style="list-style-type: none"> • Provide informational material. • Offer recommendations regarding improvements to domestic pet/livestock husbandry. 	<p>PIO</p> <p>PIO, WB</p>

Classification	Action	Responsibility ¹
	<ul style="list-style-type: none"> Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species. Remove any panther prey caches and cease all wildlife feeding. Apply aversive conditioning techniques when appropriate. Increase law enforcement patrols and monitoring in the area. 	<p>PIO, WB</p> <p>WB, LE</p> <p>WB, LE</p> <p>LE</p>
<p>INCIDENT: <i>An interaction between a panther and humans as described in an Encounter, except that the panther displays potentially threatening behavior, such as:</i></p> <ul style="list-style-type: none"> ➤ <i>A panther-human encounter occurs and the panther does not retreat when humans take offensive/aggressive actions.</i> ➤ <i>Displays behavior indicative of curiosity, including intent attention, ears up, may be shifting position.</i> ➤ <i>Intense staring, following, and hiding behavior.</i> <p><i>Natural panther behaviors such as defense of kittens or of kills may be perceived to be threatening by people; however, these occurrences are coincidental to a chance meeting and are not indicative of a continuing public safety concern.</i></p>	<ul style="list-style-type: none"> Initial LE response ASAP; field visit within 24 hours. Provide informational material. Post areas with precautions and contact information. Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry. Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species. Remove any panther prey caches and cease all wildlife feeding. Apply aversive conditioning techniques when appropriate. Increase law enforcement patrols and monitoring in the area. 	<p>LE, WB</p> <p>PIO</p> <p>LE</p> <p>PIO, WB</p> <p>PIO, WB</p> <p>WB, LE</p> <p>WB, LE</p> <p>LE</p>
<p>THREAT: <i>An unprovoked aggressive/predatory behavior toward people including stalking or close approaches that require a person to take defensive action to avoid direct contact. A panther also may be classified as a threat if it has been involved in a previous encounter, incident, or depredation and its behavior departs from expected or known behavior and previous management actions have not deterred the animal's actions.</i></p>	<ul style="list-style-type: none"> Initial LE response ASAP; field visit within 24 hours. Immediate, permanent removal of the offending panther from the wild. Close the area where the threat occurred until the offending panther has been removed. Inform local residents and other affected people of the threat. 	<p>LE, WB</p> <p>WB, LE</p> <p>LE</p> <p>PIO</p>

Classification	Action	Responsibility ¹
<p>➤Crouches with tail twitching, intense staring, ears flattened, body low to the ground, head may be up (pre-attack behavior)</p> <p>➤Ears flat, fur out, tail twitching, body and head low to ground, rear legs pumping (attack imminent).</p>	<ul style="list-style-type: none"> • Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species. • Post areas with precautions and contact information. • Remove any panther prey caches and cease all wildlife feeding. • Increase law enforcement patrols and monitoring in the area. 	<p>PIO, WB</p> <p>LE</p> <p>WB, LE</p> <p>LE</p>
<p>ATTACK: <i>A direct, physical contact between a panther and a human resulting from aggressive panther behavior.</i></p>	<ul style="list-style-type: none"> • Initial LE response ASAP; field visit within 24 hours. • Immediate, permanent removal of the offending panther from the wild. • Close the area where the attack occurred until the offending panther has been removed. • Increase law enforcement patrols and monitoring in the area. • Inform local residents and other affected people of the attack. • Post areas with precautions and contact information. • Offer recommendations to the affected landowner and residents regarding improvements to domestic pet/livestock husbandry practices. • Offer recommendations to the affected landowner and residents on landscape modifications to reduce attractiveness to panthers and prey species. • Remove any panther prey caches and cease all wildlife feeding. 	<p>LE, WB</p> <p>WB, LE</p> <p>LE</p> <p>LE</p> <p>PIO, WB</p> <p>LE</p> <p>PIO, WB</p> <p>PIO, WB</p> <p>WB, LE</p>

¹LE–Law Enforcement PIO–Public Information Officer WB–Wildlife Biologist

Appendix 3. Florida Panther Report Form.

Florida Panther Report Form

Report Tracking ID #

PART 1 Observer/Reporter Contact Information

Observer Name: _____

Address: _____

Phone number: _____

City: _____

Email address: _____

State: _____ Zip code: _____

PART 2 Observation / Location

Observation Date: _____ Time: _____ Duration of Observation: _____

Location description / Address (*include nearest town, intersection, landmark, etc*) :

City: _____ Zip: _____

County: _____ GPS (UTM) Coordinates: EW _____ NS _____

Site/Habitat Description: _____

Observation Type

- ☐ Visual
- ☐ Sign
- ☐ Livestock depredation
- ☐ Domestic animal depredation
- ☐ Human contact

Evidence

- ☐ Photo
- ☐ Video
- ☐ Track
- ☐ Plaster Cast
- ☐ Scat
- ☐ Hair
- ☐ Prey Carcass
- ☐ Prey Injury
- ☐ Panther Carcass (ie. roadkill)
- ☐ Other _____

Observation Details

Number of Animals Observed: _____ Distance Observed From: _____

Description of animal observed:

Color: ☐ Black ☐ Brown ☐ Tan ☐ Other _____ Spots: ☐ Yes ☐ No

Estimated Size: Weight _____ Height _____ Body Length _____ Tail Length _____

Other: _____

Behavior of animal observed:

Ears: ☐ Up ☐ Flattened Tail: ☐ Normal ☐ Twitching

Body Position: ☐ Running ☐ Walking ☐ Standing ☐ Crouching

Behavior: ☐ Flight/Retreating ☐ Hiding ☐ Lack of Attention ☐ Intent Attention

☐ Intense Staring ☐ Curiosity ☐ Following ☐ Hissing or Snarling ☐ Other vocalization _____

☐ Defensive posture ☐ Stalking ☐ Other _____

Comments: _____

Florida Panther Report Form

PART 3 Report Taker Information *(to be completed by report taker)*

Name: _____ Date of Report: _____

Phone number: _____ Agency: _____

Email address: _____ Address: _____

City: _____ Zip: _____

Remarks: _____

PART 4 Investigation *(to be completed by investigator)*

Investigator Information

Name: _____ Agency: _____

Phone: _____ Address: _____

Email: _____ City: _____ Zip: _____

Investigation Actions

Date Investigated: _____

☐ Reviewed evidence ☐ Interviewed observer ☐ Site Inspected ☐ Photos ☐ Plaster casts

☐ DNA evidence collected (specify) _____ ☐ Other samples collected (specify) _____

Investigation Details: _____

Florida Panther Report Form

PART 5 Conclusions, Actions & Recommendations *(to be completed by Panther Response Team Member)*

Name: _____

Date Closed: _____

Findings

- ☐ Confirmed
- ☐ Unconfirmed
- ☐ Not a panther

Classification

- ☐ Sighting if repeat, # _____
- ☐ Encounter if repeat, # _____
- ☐ Depredation if repeat, # _____
- ☐ Incident if repeat, # _____
- ☐ Substantial Public Threat
- ☐ Attack

Details: _____

Response Actions

- ☐ Distributed educational materials
- ☐ Enforced regulations
- ☐ Instructed to stop wildlife feeding
- ☐ Advised on improving husbandry
- ☐ Removed cached prey
- ☐ Posted informational signage
- ☐ Alert LE

Details / Further Recommendations: _____

Follow Up Remarks: _____

Send completed form to:
FWC Panther Section
566 Commercial Blvd.
Naples, FL 34104-4709
Darrell.Land@myfwc.com

Revised 11/14/2005

Appendix 4. Florida Panther Outreach Plan

Florida Panther Outreach Plan for Panther-Human Interactions

Problem Statement:

As the human population of Florida, and the population of Florida Panthers, continues to expand, reports of panther/human encounters may increase. The Florida Fish and Wildlife Conservation Commission (FWC), U.S. Fish and Wildlife Service (FWS), and National Park Service (NPS) seek to educate and inform the public in order to help South Florida residents, and visitors to public lands, coexist with panthers. Particularly the agencies seek to educate residents in urban interface areas where human occupation may result in interaction between humans and panthers.

Key Publics:

- Residents and homeowners in South Florida that may live in or near Florida Panther habitat (Primary counties include Collier, Lee and Hendry. Secondary counties include Miami-Dade and Monroe. Key communities include Golden Gate Estates, Town of Ave Maria, Belle Meade, and future developments in eastern Collier County, as well as residents on Seminole and Miccosukee lands.)
- Builders, developers and real estate agents in the same counties and communities identified above.
- Large landowners and ranchers in rural areas of the counties listed above.
- Visitors to public lands within panther habitat
- City, County, State and Federal elected officials, and Tribal governments
- Public land agencies – Managers, Law Enforcement Agents and public interface employees (county sheriff offices, FWS, NPS, FWC officers)
- News media
- Schoolchildren and school officials
- Non-governmental, environmental organizations (e.g. Florida Panther Society, National Wildlife Federation, Defenders of Wildlife, etc.)
- All Floridians

Goals:

1. To ensure public safety while living near, or visiting within, panther habitat, while also protecting the panther population.
2. Improve the public's knowledge on how to coexist with panthers, including:
 - a. how to properly identify a panther and understand panther behavior
 - b. how to act if a person ever encounters a panther
 - c. how to reduce the likelihood of conflict by not intentionally feeding wildlife and properly caring for domesticated animals.
3. Establish FWC, FWS and NPS as experts in dealing with panthers.
4. Inform people that the panther population in the state, while still endangered, is increasing. However, due to development, suitable habitat is minimal, and people are moving into habitat range, which may increase sightings of the animal.
5. Educate the public about the problems associated with intentionally attracting wildlife near residences, ultimately reducing attractants for large species such as bear,

- panthers and other species that may create a perceived threat such as raccoons, skunks, opossums and armadillos.
6. Agencies will be coordinated and consistent in responding to human / panther encounters.
 7. Form partnerships with public agencies, private citizens, NGOs and tribes to advance all other goals of the campaign.

Activities / Media:

All activities and materials will be jointly developed by the FWS, NPS and FWC, but can be produced separately by each agency. Actions are prioritized as immediate (completed by February, 2006 Or completed as part of EA), mid-term (completed by July, 2006), and long-term (completed by January, 2007). Except for immediate actions, mid-term and long-term actions are dependent upon available staff and funding.

Immediate

- Create fact sheets to educate individuals that report an interaction with a Florida panther. Law enforcement, public information officers, wildlife biologists, and other responders will have these available to hand out to the public. The information for these fact sheets will be compiled from "Guidelines for Living with Florida Panthers and Interagency Florida Panther Response Plan, Chapter Two: Living With Panthers." Primary topics include:
 - "Panther proofing" their property, and/or camp
 - Protecting livestock and pets
 - How to react when seeing a panther.
- Create temporary informational signage for visitor use areas on public lands within panther habitat.
- Write Frequently Asked Questions to be available in print and on the web.
- Develop a central panther website, specific for living in panther habitat, where residents may be able to report sightings, and that can be linked to each agency site.

Mid-term

- Develop curriculum based education program similar to the FWC "Bear Aware" program. This may include a suite of coordinated materials such as litter bags, magnets, stickers, posters, and activity boxes for teachers, and other materials.
- Produce and distribute appropriate site bulletins and information materials (such as door hangers, posters and a suite of complementary brochures), to area residents, and visitors to panther habitat, on how to:
 - "Panther proof" their property, and/or camp
 - Protect livestock and pets
 - React when seeing a panther in such a way that will protect them and the cat.
- Develop PowerPoint presentation for use at trainings, outreach events, meetings, etc.

Long-term

- Conduct media training for selected individuals within agencies.

- Host a press conference to announce the availability of panther awareness materials. This will be the kick-off to expanding media coverage of the response efforts by print and broadcast media across the state, but especially in the South Florida markets.
- Distribute media kits to all the relevant media/journalists on agency media contact lists.
- Create print, radio, and/or broadcast PSAs as part of a panther awareness campaign.
- Conduct pre- and on-site orientation / tours for elected and tribal representatives to inform them of the issue and the response by agencies.
- Arrange for and present events where panther presentations are made and information is disseminated to relevant organizations, such as school boards and homeowners associations.
- Distribute Florida Panther Response information, including tips for living in lion country, via mass mailings produced in cooperation with a partner (FPL, SFWMD, Sprint, Bell-South, and Local Utilities).
- Send direct mail pieces related to the campaign to the targeted neighborhoods.
- Identify opportunities for a short video and/or public broadcast program on the Florida panther.
- Consider creating a Florida panther liaison volunteer program. Neighborhood volunteers would be trained on how to live with Florida panthers and would serve as a resource to their neighbors.
- Consider sponsoring and funding a controlled survey to evaluate the effectiveness of the outreach campaign.

Panther Response Plan – Outreach Plan
Table of Immediate Outreach Actions

IMMEDIATE				
Deliverable	Responsible Party	Distribution	Timeline	Cost/Funding Source
Create fact sheets to educate individuals that report an interaction with a Florida panther.	NPS will write and design, edits provided by FWC and FWS – all agency logos/contact information on final products	<ul style="list-style-type: none"> ■ Law enforcement, public information officers, wildlife biologists and other responders will have these available to hand out to the public. ■ Web ■ Visitor centers, nature centers 	February 28, 2006	Prepared, duplicated in-house by agency writers and designers; costs absorbed by agency overhead
Create temporary informational signage for visitor use areas on public lands within panther habitat	FWS will write and design, review and edit by NPS and FWS – agency logos/contact information on final products	<ul style="list-style-type: none"> ■ Florida Panther NWR ■ Big Cypress NP ■ Florida Wildlife Management Areas ■ offered to public and private land managers, including FL DEP, FL state forests, South Florida Water Management District, and tribal lands 	February 28, 2006	TBD
Frequently Asked Questions	FWS to draft with edits provided by FWC and NPS	<ul style="list-style-type: none"> ■ Website of each agency ■ Copies made to distribute as requested to press/interested citizens 	February 28, 2006	Prepared, duplicated in-house by agency writers and designers; costs absorbed by agency overhead
Develop a website that addresses living with panthers as part of FWC's Panther.net	FWC to draft with edits provided by FWS and NPS; hosted by FWC at http://www.myfwc.com/panther/	Web	June 30, 2006	Prepared in-house by agency writers and designers; costs absorbed by agency overhead

* Mid-term and long-term outreach actions will be prioritized and implemented by the Outreach Subcommittee of the Florida Panther Recovery Team as time and funding are available. The subcommittee will meet in January, 2006 to begin prioritizing these actions.